2018- 2023

Books and chapters in edited volumes/books published and papers published by faculty at BNCA in national/ international conference proceedings per teacher during last five years:

No of Books/ Book Chapters: 05
No. of Published Papers: 77

	books /chapters/papers		books /chapters/papers
2018	7		
2019	7	2018-19	7
2020	13	2019-20	7
2021	3	2020-21	16
2022	39	2021022	39
2023	14	2022-23	14
Total	**83**	**total**	**83**

PRINCIPAL
MKSSS's DR. BHANUBEN NANAVATI
College of Architecture For Women
Karvenagar, Pune-411 052.

Dr. Anurag Kashyap
(Principal | BNCA)

Dr. Chetan Sahasrabudhe
(IQAC Co-Ordinator | BNCA)

BNCA

3.3.2 Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during last five years

Sl. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Name of the conference	National / International	Calendar Year of publication	ISBN number of the proceeding	Affiliating Institute at the time of publication	Name of the publisher
2018										
B1	Dr. Swati Sahasrabudhe	TOWARDS AN ECOLOGICAL LANDSCAPE: Series #1		NA			2018	ISBN-13 : 978-81-920642-5-3	Dr B N College of Architecture for women, Pune	BNCA Publication Cell
1	Poorva Kulkarni	NA	Sustainable homes in steel: Prospects for future development of Indian housing sector.	International conference on infrastructure development	International conference on infrastructure development -ICID	International	2018		Dr B N College of Architecture for women, Pune	ICID Jorhat engineering college,Jorhat,Assam,India
2	Meera Shirolkar	NA	Modelling Evacuation Behaviour of a Health Care Unit on fire occurence with MATLAB Program.	International conference on infrastructure development	International conference on infrastructure development -ICID	International	2018		Dr B N College of Architecture for women, Pune	ICID Jorhat engineering college,Jorhat,Assam,India
3	Prajakta Dalal-Kulkarni	NA	Applicability of Net Zero Energy Building (NZEB) Concept in the Residential Sector in India	International conference on infrastructure development	International conference on infrastructure development -ICID	International	2018		Dr B N College of Architecture for women, Pune	ICID Jorhat engineering college,Jorhat,Assam,India
4	Dharati Sote-Wankhade	NA	Legislative Framework of Developed and Developing Countries For Construction & Demolition Waste Management	International conference on infrastructure development	International conference on infrastructure development -ICID	International	2018		Dr B N College of Architecture for women, Pune	ICID Jorhat engineering college,Jorhat,Assam,India
5	SHUBHADA KAMALAPURKAR	NA	Cultural Landscape of Ayodhya: Pilgrim and Resident Perceptions	Pilgrimage Cities & Cultural Landscapes of Asia and prospects for Sustainable Tourism	7-ACLA, Asian Cultural Landscape Association-International Symposium: 23 - 26 October 2018, Avadh University, Ayodhya, India	INTERNATIONAL	2018		Dr B N College of Architecture for women, Pune	Avadh University, Ayodhya, India
6	AMRUTA GARUD	NA	Urbanizing India and the Need for Natural Resources Planning	ProceedingsASCE India Conference 2017Urbanization Challenges in Emerging Economies		International	2018	ISBN (PDF):9780784482025	IIT B	American Society of Civil Engineers (ASCE)
2019										
7	"Sonali Indalkar, Prajakta Dalal Kulkarni , Sujata Karve, Namrata Dhamankar"		Evaluating Rooftop Solar Photo - Voltaic Potential of Existing High Rise Residential Buildings in Pune	NA	i-manager's Journal on Power Systems Engineering (JPS)		2019		Dr B N College of Architecture for women, Pune	
8	Rucha Nachane, Sujata Karve	NA	Perception of designers on the use of sustainable interior materials and finishes, and awareness about their effect on Indoor Air Quality	"DYCOA- MASA Research Conference 2019"	"DYCOA- MASA Research Conference 2019"	National	2019	ISBN : 978-81-944331-0-1	Dr B N College of Architecture for women, Pune	D Y Patil College of Architecture, Pune
9	Aarti Verma	NA	Home Gardens as Locales for Urban Ecology	VISTARA by Dr. MGR Educational and Research Institute Chennai	International Conference on Architectural Anthroplogy, Chennai	International	2019		Dr B N College of Architecture for women, Pune	MGR Educational and Research Institute Chennai
10	SHUBHADA KAMALAPURKAR	NA	Pilgrim and Resident Perceptions of the Cultural Landscape of Ayodhya, India	Sacred Landscapes of Pilgrimage in India: Patterns and Practices"	48th Annual Conference on South Asia, UNIVERSITY OF Wisconsin-Madison, USA	iNTERNATIONAL	2019		Dr B N College of Architecture for women, Pune	
11	Dhanashri Mankar, Sujata Karve	NA	Feasibility of Low Energy Cooling Technologies in Residential Sector.	NA	7 th INTERNATIONAL CONFERENCE ON ENERGY RESEARCH & DEVELOPMENT (ICERD-7)	International	2019		Dr B N College of Architecture for women, Pune	

12	"Vrinda Panse, Sujata Karve, Rahul Nawle"		Understanding Transit oriented Development and Its Effect on Livability	NA	Futura Icon 2019	National	2019		Dr B N College of Architecture for women, Pune	
13	Sanika Kulkarni, Ar. Prajakta Kulkarni, Dr. Sujata Karve		Need of energy conservation measures in existing residential buildings	International Journal of Research and Analytical Reviews		International	2019	E-ISSN 2348-1269, P-ISSN 2349-5138	Dr B N College of Architecture for women, Pune	
2020										
B2	Dr.Kavita Murugkar, Dr. Anurag Kashyap, Abir Mullick	Disability Studies in India - Design as an equalizer	Examining the Experience, Barriers and Enabling Measures for Visually Impaired Visitors in Heritage Sites—A Study in the Indian Context to Enhance Accessibility and Inclusion	NA			2020	978-93-5382-738-0	Dr B N College of Architecture for women, Pune	ISBN 978-981-15-2615-2 https://link.springer.com/chapter/10.1007/978-981-15-2616-9_17
14	Poorva Kulkarni		Technology transfer for addressing demand for sustainable housing in 2050.	Envisioning India 2050- Concerns of urban environment	Sinhgad College conference 2020	National	2020		Dr B N College of Architecture for women, Pune	
15	Prajakta Dalal-Kulkarni		Importance of India's Net zero Energy Shift in residential sector by 2050	Envisioning India 2050- Concerns of urban environment	Sinhgad College conference 2020	National	2020		Dr B N College of Architecture for women, Pune	
16	Prajakta Dalal-Kulkarni, Namrata Dhamankar, Nidhi Dixit	NA	Estimating Potential Solar Energy on Rooftops using Unmanned Aerial Vehicle	2019 International Conference on Computational Intelligence and Knowledge Economy (ICCIKE)	International Conference on Computational Intelligence and Knowledge Economy (ICCIKE)	International	2020	Electronic ISBN:978-1-7281-3778-0 Print on Demand(PoD) ISBN:978-1-7281-3779-7	Dr B N College of Architecture for women, Pune	IEEE
17	PRAJAKTA DALAL, MEERA SHIROLKAR, VASUDHA GOKHALE	NA	Net-Zero Energy Building Approach: A Solution To The Paradox Of Energy Efficiency In Indian Housing Sector	Emerging Trends and Innovations in Sciences" organised by Department of Chemistry, Institute of Excellence in Higher Education (IEHE). MPCST, Vigyan Bhavan, Bhopal, India	Emerging Trends and Innovations in Sciences	National	2020		Dr B N College of Architecture for women, Pune	
18	POORVA KULKARNI, VASUDHA GOKHALE, DEEPA JOSHI	NA	Exploring Role Of Steel Composite Buildings To Meet Targets Of Pradhan Mantri Awas Yojana	Emerging Trends and Innovations in Sciences" organised by Department of Chemistry, Institute of Excellence in Higher Education (IEHE). MPCST, Vigyan Bhavan, Bhopal, India	Emerging Trends and Innovations in Sciences	National	2020		Dr B N College of Architecture for women, Pune	
19	Vaishali Anagal, Abhijit Natu	NA	"Process of Residential Redevelopment: A case of an Indian City "	National Level Conference 2020- 'Envisioning India 2050'	SCOA, Pune	National	2020	ISBN: 978-81-929293-1-6	Dr B N College of Architecture for women, Pune	Sinhgarh College of Architecture, Pune
20	Drishti Jain, Vaishali Anagal	NA	A Survey on People's Opinion About Smart City Initiative in Aundh Area	National e-Conference on Empirical Theories NCET-2020	e-Proceedings of the National e-Conference on Empirical Theories NCET-2020	National	2020	ISBN: 978-93-5416-259-6	Dr B N College of Architecture for women, Pune	Allana College of Architecture, Pune
21	Netrali Adhav, Vaishali Anagal	NA	The Effect Of Neighbourhood Characteristics And Amenities On The Property Value	National e-Conference on Empirical Theories NCET-2020	e-Proceedings of the National e-Conference on Empirical Theories NCET-2020	National	2020	ISBN: 978-93-5416-259-6	Dr B N College of Architecture for women, Pune	Allana College of Architecture, Pune
22	Preet Kulkarni, Vaishali Anagal	NA	Mechanized Parking In Redevelopment Projects- Utility And Other Issues	National e-Conference on Empirical Theories NCET-2020	e-Proceedings of the National e-Conference on Empirical Theories NCET-2020	National	2020	ISBN: 978-93-5416-259-6	Dr B N College of Architecture for women, Pune	Allana College of Architecture, Pune
23	Poorva Kulkarni, Vasudha Gokhale	NA	Integrating Theoretical and conceptual framework in PhD research	Phd Colloqium 2020	PhD colloqium organised by Sushant school of Art and Architecture,Ansal University,Gurgaon,India	National	2020		Dr B N College of Architecture for women, Pune	Sushant school of art and architecture,Ansal university,Gurgaon,India
24	Dhanashri Mankar, Sujata Karve	NA	Feasibility of Low Energy Cooling Technologies in Residential Sector.	NA	7 th INTERNATIONAL CONFERENCE ON ENERGY RESEARCH & DEVELOPMENT (ICERD-7)	International	2020		Dr B N College of Architecture for women, Pune	Kuwait
25	Dharati Sote-Wankhade, Vasudha Gokhale		The potential use of waste management models to minimize construction waste: A review	National conference on Envisioning India 2050- Concerns of Urban Environment – NCEI	SCOA, Pune	National	2020		Dr B N College of Architecture for women, Pune	OA, Pune
2021										
B2	Dr Vasudha Gokhale	Reliability- Based Analysis and Design of Structures	Positioning Resiliance in Design and Analysis of Structures and Infrastructure	NA			2021	eBook ISBN 9781003194613	Dr B N college of Architecture for women Pune	CRC Press- Boka Raton
B3	Amruta Garud	Urban Science and Engineering: Proceedings of ICUSE 2020 Conference proceedings© 2021	Understanding the Implications of the Loss of Peri-Urban Arable Land—A Case of Pune Metropolitan Region	NA			2021	978-981-33-4114-2Published: 17 March 2021		Springer Singapore
B4	Dr Avanti Bambawale and Dr Sudhir Chavan	A text book of Research In Architecture	NA	NA			2021	ISBN 978-93-5593-372-0	Sinhgad College of Architecture	Dyandeo-Vijay Foundation, Pune
2022										

B5	Dr Sharvey Dhongade	Courtyard Houses of India	Western India : Wadas of Maharashtra(185 - 205)	NA			2022	978-93-85360-09-1		Mapin Publishing
26	Ar. Amruta Barve and Dr. Swati Sahasrabudhe		Embedding Creative Art In The Landscape Design Studio At Post Graduate Level: A Pedagogical Approach	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
27	Ar. Surabhi Gadkari and Ar. Khushboo Chandwania		Pedagogical Approach To Study Vernacular Settlement In Kodagu, India Through Experiential Learning	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
28	Dr. Vaishali Anagal and Ar. Deva Prasad		The Use Of Virtual Reality And Neuro-Feedback Technology In Architectural Academia	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
29	Ar. Kanchan Atnurkar and Dr. Sujata Mehta		Contextualizing Pedagogical Approach For Structural Literacy For Architecture Education	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
30	Dr. Dharati Wankhade and Ar. Shweta Albal		Architectural Student's Attitude And Response Towards Experiential Learning By Adopting Inquiry-Based Learning In Building Material Education	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
31	Dr. Sanjeevani Pendse and Dr. Vasudha Gokhale		Identifying Parallels Between Music And Architecture	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
32	Vrushali Pokharkar and Dr. Aarti Verma		Adaptation Potential Of Our Residences Post Covid-19 Lockdown	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
33	Ar. Mrudula Kulkarni and Dr. Amruta Garud		Space Design For Better Learning Environments	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
34	Ar. Trushna Dantale and Dr. Aarti Verma		Citizen's Preference Regarding The Development Of The Mutha Riverfront Lead Towards Social Interaction	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
35	Ar. S. Pratishtha and Dr. Meera Shirolkar		Street Lighting And Perceived Personal Safety In Urban Mixed-Use Environments	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
36	Ar. Shivali Bhalinge and Dr. Swati Sahasrabudhe		Engagement With Degraded Urban Landscapes Toward Future Green Infrastructure: Investigating People's Association With Abandoned Quarryscapes	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune

37	Dr. Sujata Mehta and Ar. Kanchan Atnurkar		Applications Of Shape Memory Alloys For Enhanced Building Performance	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
38	Aditi Dhorde and Ar. Madhuri Zite		An Objective Study On National Education Policy 2020 In Relation To Indian School Design	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
39	Ar. Neha Adkar		Biophilic Landscapes: Challenges In Planning, Execution, And Maintenance Of Non[1]Artificial Vertical Green Wall Systems In India	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
40	Ar. Sayali Andhare and Ar. Khushboo Agaarwal		189 Identification Of Potential, Advantages, Prospects, And Impediments Of Using Bamboo As A Building Material - Stake Holders' Perspective With Reference To Indian Context	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
41	Ar. Yash Joshi and Ar. Shruti Ramteerthkar		Is The Consideration Of Intangibles Equal To Tangibles In Heritage Conservation	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
42	Ar. Mandar Athavale		Post Occupancy Evaluations Of In-Situ Slum Redevelopment Projects: Case Of Ahmedabad And Pune	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
43	Dr. Amita Pradhan		Digital Transformation Of Library And Information Services In Architecture	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
44	Ar. Tapati Bhanja and Ar. Nikita Gurav		Loss Of Cultural Identity In Indian Cities: Recognizing The Sense Of Place And The Reasons Behind Its Loss	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
45	Dr. Anurag Kashyap and Dr. Avanti Bambawale		Giripradakshina: An Experiencial Spiritual Tourism And Its Role In Development Of Physical Infrastructure Of Tiruvannamali, Tamil Nadu, India	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
46	Anuja Kale and Ar. Madhuri Zite		Impact Of Commercial Gentrification On The Community Wellbeing In Residential Areas: Astudy Of Developing Streets Of Nashik City	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
47	Ar. Sujata Kodag		Disaster Risk Reduction Of Smart Cities Through Spatial Planning Perspective- A Case Of Pune	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune
48	Sharayu Awale and Ar. Neha Joshi		Evolution Of Semi-Public Spaces In A Chawls Of Mumbai	Proceedings of the National Conference Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National Conference - Built Environment and Beyond: Theory and Practice 18th and 19th October 2022	National	2022	eBook ISBN: 978-81-955887-1-8	Dr B N College of Architecture for women, Pune	Dr B N College of Architecture for women, Pune

49	Swati Sahasrabudhe	NA	Merging landscapes scales: A journey through pedagogical approaches in Landscape Architecture Studios	Scales of Change, ECLAS Conference 2022 , University of Ljubljana Biotechnical faculty	ECLAS Conference 2022 Scales of change 12. – 14. 9. 2022 Ljubljana, Slovenia + online	International	2022	ISBN :978-961-6379-65-6 (PDF)	University of Ljubljana Biotechnical faculty	University of Ljubljana, Biotechnical Faculty, Jamnikarjeva 101, 1000 Ljubljana, Slovenia
50	Prof Mahesh Bangad and Urvashi Vaijwade	NA	Architecture as a Catalyst in Mitigating Heat Island Effect	9th Sustainable Drevelopment Conference SDC 2022, Bankok		International	2022	ISBN 978-86-87043-85-5	Dr Bhanuben Nanavati College of Architecture for Women	BNCA Publication Cell
51	Rashmi Markendeya and dr Avanti Bambawale	NA	Importance of Nisarg sanskar in Formative Years of School	Virtual National Conference on Rural Architecture and Regional Planning - PRCOA		National	2022	ISBN 978-93-92774-00-3	Dr Bhanuben Nanavati College of Architecture for Women	
52	Sarah Melsens, Chetan Sahasrabudhe		Technical Writings as Political: Building Manuals and Pattern Books From British India	Timber and Construction: the Proceedings of the Ninth Conference of the Construction History		International	2022	ISBN 9780992875183	Dr Bhanuben Nanavati College of Architecture for Women	Construction History Society c/o Department of Architecture Cambridge University, Scroope Terrace Cambridge, CB1 1PX
53	Sayali Andhare, Namrata Dhamankar	NA	Evaluating indoor environmental quality of onsite construction workers housing in Pune, India through performance-based simulation	BSO VI 2022, 6th Building Simulation and Optimization Virtual Conference Dec 2022, Univ of Bath, UK		International	2022		Dr Bhanuben Nanavati College of Architecture for Women	
54	Shruti Joshi and Vasudha Gokhale	NA	Gentrification Induced Streetscape Changes Case Study: Jangali Maharaj Road ,Pune	NCA - 2022 Conference Proceedings Sep 2022 - International journal of engineering research and technology Vol 10, Issue 3		National	2022	ISSN: 2278-0181	Dr Bhanuben Nanavati College of Architecture for Women	
55	Dr. Avanti Bambawale*, Dr. Anurag Kashyap and Dr. Avinash Gaikwad	NA	Developing Sidewalk Assessment Tool: Towards Evaluation Of Pedestrian Environment In Urban Areas	National Convention on People Centric Urban Governance in India -December 6-7, 2022 pg 5 Centre for Urban Studies, ND	National Convention on People Centric Urban Governance in India	National	2022	No ISBN	Dr Bhanuben Nanavati College of Architecture for Women	Studies (under the aegis of MoHUA, Govt. of India) Indian Institute of Public Administration IP Estate, Ring Road, New Delhi-110002
56	Mrunalini V. Patil and Dr. Avanti Bambawale	NA	EVALUATION OF USABILITY OF PUBLIC PARKS IN SATARA CITY (W.R.T. INCLUSIVE DESIGN),DIST – SATARA, MAHARASHTRA	PCRA Book of Proceedings 2022		National	2022	ISBN 978-99-92774-00-3	Dr Bhanuben Nanavati College of Architecture for Women	
57	Ar. Swati Kashyap, Ar. Geeta Nagarkar.		"Analysis of Chhari Dhand wetland and Banni Grassland, Bhuj, Gujrat and its impact on local Communities."	National conference by Pravara college of Architecture 'Rural Architecture and Regional Planning' -		National	2022	ISBN: 978-93-92774-00-3	Dr Bhanuben Nanavati College of Architecture for Women	
58	Neha Joshi and Pradnya Patki		Roadmap for strengthening Rural Development: A Case of Ribandar, Goa	Virtual National Conference on Rural Architecture and Regional Planning			2022	ISBN 978-93-92774-00-3	Dr Bhanuben Nanavati College of Architecture for Women	
59	Om Prakash, Ankish Aman, Saurabh Ranjan, Namrata Dhamankar	Energy Simulation and Modelling of Corporate Building: A Case Study		Advances in Smart Grid Automation and Industry 4.0		Book Chapter	2022	978-981-15-7677-5 (soft copy) 978-981-15-7674-4 (hardcopy)	Dr Bhanuben Nanavati College of Architecture for Women	
60	Pornima Buddhivant, Sujata Karve	NA	Urban Agriculture: for the people, by the people	National Online Conference on Planning, Design and Management (PLEASTGO 2022) Santiago : Chile		National	2022	ISBN 978-956-14-3068-6	Dr Bhanuben Nanavati College of Architecture for Women	

61	Prajakta Dalal-Kulkarni, Namrata Dhamankar, Nidhi Dixit	NA	Estimating Potential Solar Energy on Rooftops using Unmanned Aerial Vehicle	2019 International Conference on Computational Intelligence and Knowledge Economy (ICCIKE)		International	2022	Electronic ISBN:978-1-7281-3778-0 Print on Demand(PoD) ISBN:978-1-7281-3779-7 DOI: 10.1109/ICCIKE47802.2019.9004418	Dr Bhanuben Nanavati College of Architecture for Women	
62	Prof Asmita Joshi, Ar Anagha Kotkar & Dr Sharvey Dhogade	NA	Understanding Secret Landscape along revier Kukadi near Nighoj at Ahmednagar District	Virtual National Conference on Rural Architecture and Regional Planning		National	2022	ISBN 978-93-92774-00-3	Dr Bhanuben Nanavati College of Architecture for Women	
63	Rashmi Markendeya and dr Avanti Bambawale	NA	Importance of Nisarg sanskar in Formative Years of School	Virtual National Conference on Rural Architecture and Regional Planning - PRCOA		National	2022	ISBN 978-93-92774-00-3	Dr Bhanuben Nanavati College of Architecture for Women	
2023										
64	Ms. Rijuta Pulliwar, Dr. Avanti Bambawale, Dr. Anurag Kashyap 124	NA	Bridging the gap between architecture and common man	Peri Urban Architecture and planning	Peri Urban Architecture and planning	National	2023	ISBN 978-81-960313-0-5	Dr Bhanuben Nanavati College of Architecture for Women	Pravara Rural Education Society
65	Ms Anushka Nagle, Dr Avanti Bambawale and Dr Anurag Kashyap 8	NA	Public Toilets, Indian Women and Urban Planning –The case of Pune- by	Peri Urban Architecture and planning	Peri Urban Architecture and planning	National	2023	ISBN 978-81-960313-0-5	Dr Bhanuben Nanavati College of Architecture for Women	Pravara Rural Education Society
66	Shivraj Dangat, Vaishali Latkar	NA	Understanding socio-cultural and ecological relevance of sacred groove in Western ghats Maharashtra- Panshet valley	Peri Urban Architecture and planning		National	2023	ISBN 978-81-960313-0-5	Dr Bhanuben Nanavati College of Architecture for Women	
67	Vaishali Anagal, Abhijit Natu	NA	Punarvikasasambhadhiche Shaskiy Dhoran-Niyamavalimadhe Badal ani Avhane (Marathi paper)	Dwitiy Rajyastariy Vastukala Marathi Parishad 2023 - State Level- Directorate of Technical Education and BKPS College of Architecture		National	2023	ISBN-978-93-5780-547-6	Dr Bhanuben Nanavati College of Architecture for Women	
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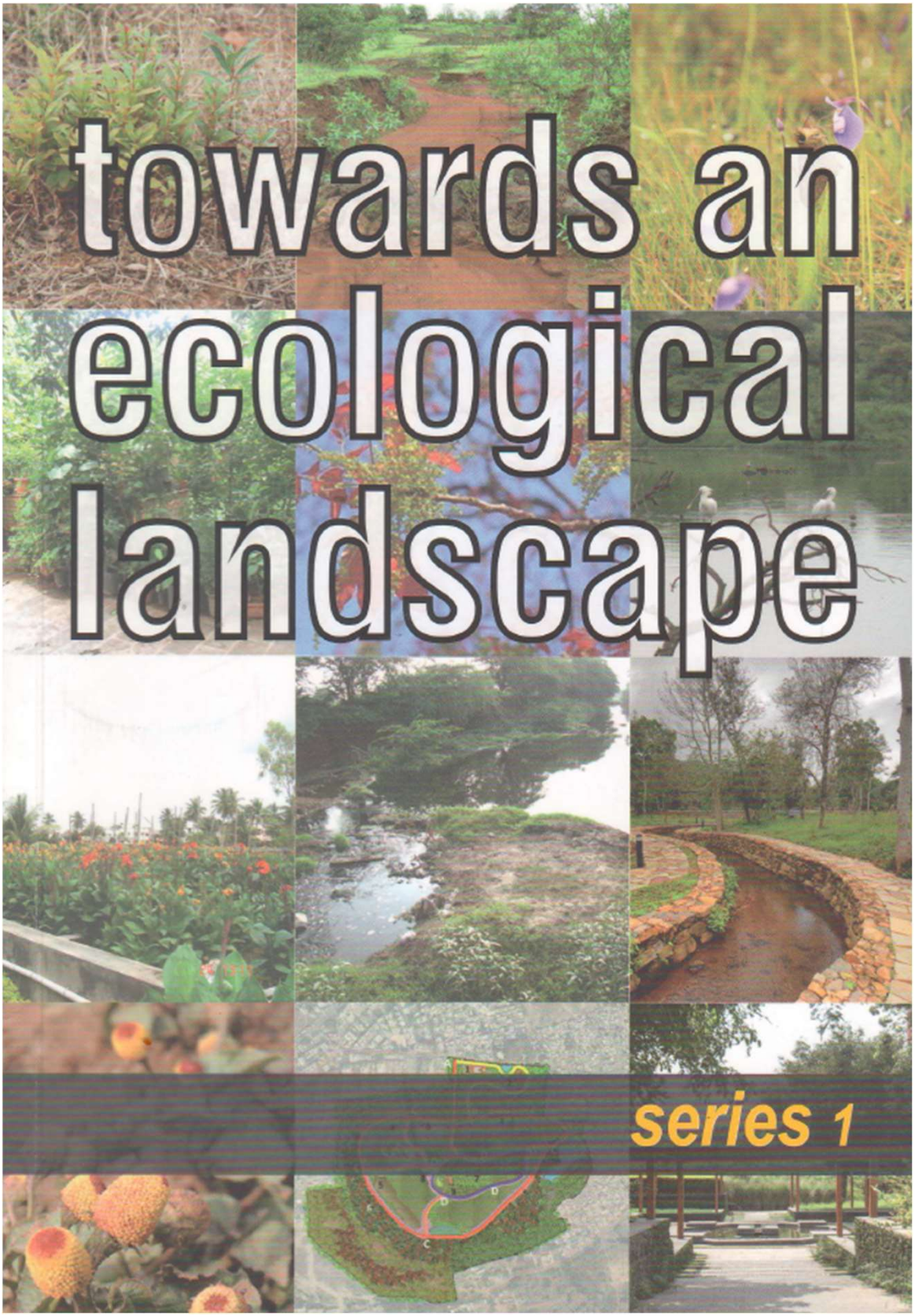

TOWARDS ECOLOGICAL LANDSCAPE

This text of this book is sourced from the symposium presentations and written in the form of articles.

towards an ecological landscape

series 1

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Landscape Architecture Symposium
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towards an ecological landscape

series 1

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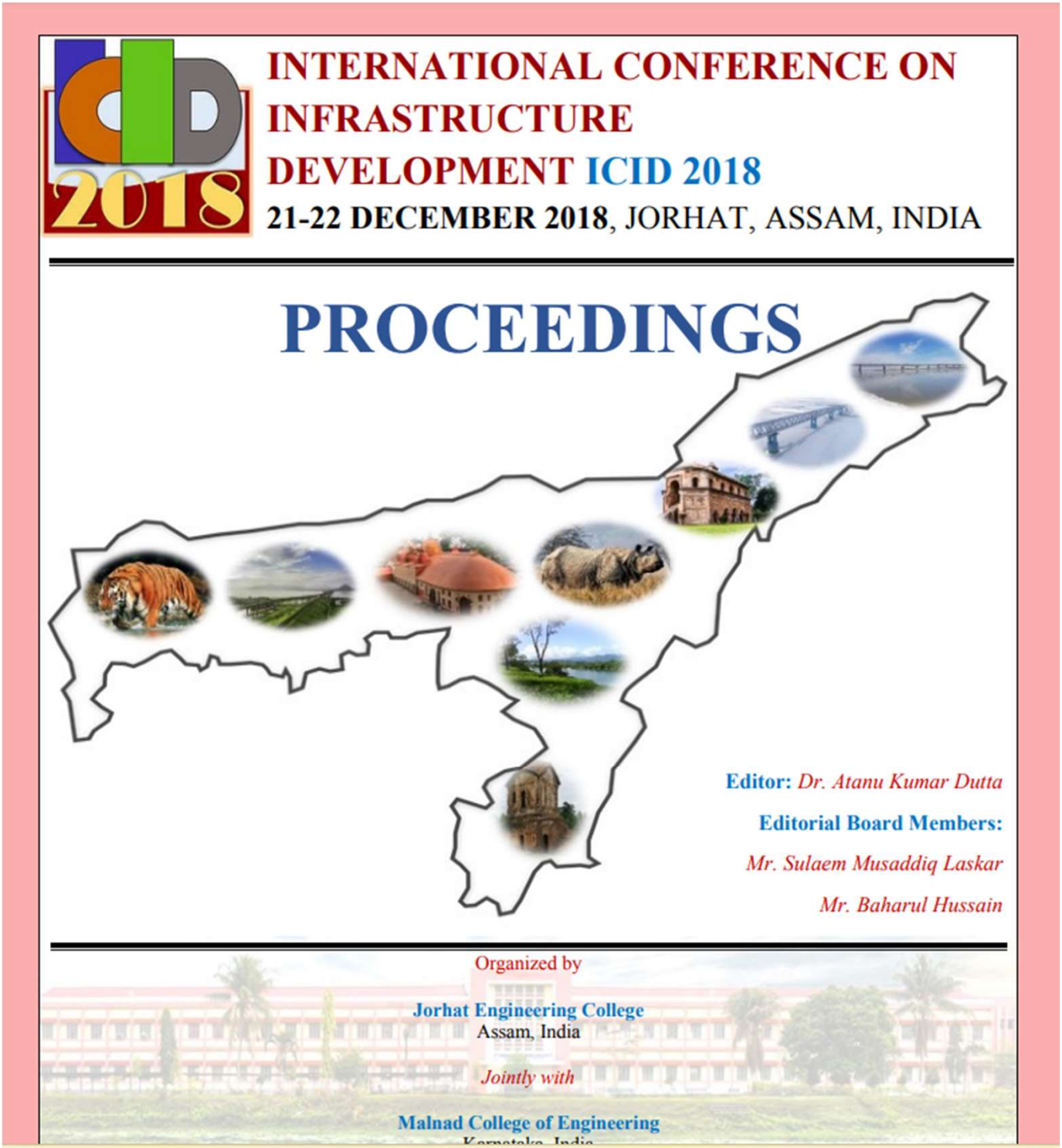

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LEGISLATIVE FRAMEWORK OF DEVELOPED AND DEVELOPING COUNTRIES FOR CONSTRUCTION & DEMOLITION WASTE MANAGEMENT
ICID2018_B_003

Dharati Sote-Wankhade[1], Dr. Vasudha Gokhale[2]
1,2 MKSSS's Dr. B. N. College of Architecture, Karvenagar, Pune, Maharashtra, India

ABSTRACT

The economic development of every country is visible in its urbanization and industrialization. The rate of development proportionately generates amount of Municipal Solid Waste(MSW) base on population, urban structure and people's attitude. Construction industry develops urban structure in form of infrastructure and buildings to accommodate population and required services. At the same time, it exploits natural resources, consumes enormous energy, creates pollution and generates huge amount of construction and demolition (C&D) waste which accommodate large size of landfill sites for disposal.Various developed countries adopt C & D waste management practices in their laws and legislation to reduce the amount of MSW as much possible extent. On the other hand, the developing countries are still in formulation of strategies to be adopted to address the issue.This paper discusses the laws and regulations and framework adopted by developed countries and its effect on reduction of amount of waste from landfill. It converses on the strategies that are in process by the various developing countries. The findings are expected to help to raising awareness for a change of institutional framework among policymakers, developers, and stakeholders for an efficient C & D waste management in future.

Keywords: development, C & D Waste, landfill sites, laws and legislation

1 INTRODUCTION

Industrialization which promotes economic development of any country increases the demand for the improved education (educated workforce) and public works agencies (pleasant living conditions) that are characteristics of urbanization.Along with industrialization and urbanization, the requirement ofspaces for accommodating and facilitating the rising population and providing services to them is proportionately increasing.To suffice the requirement of spaces like building and infrastructure, construction industry play important role in erecting them in urban areas.

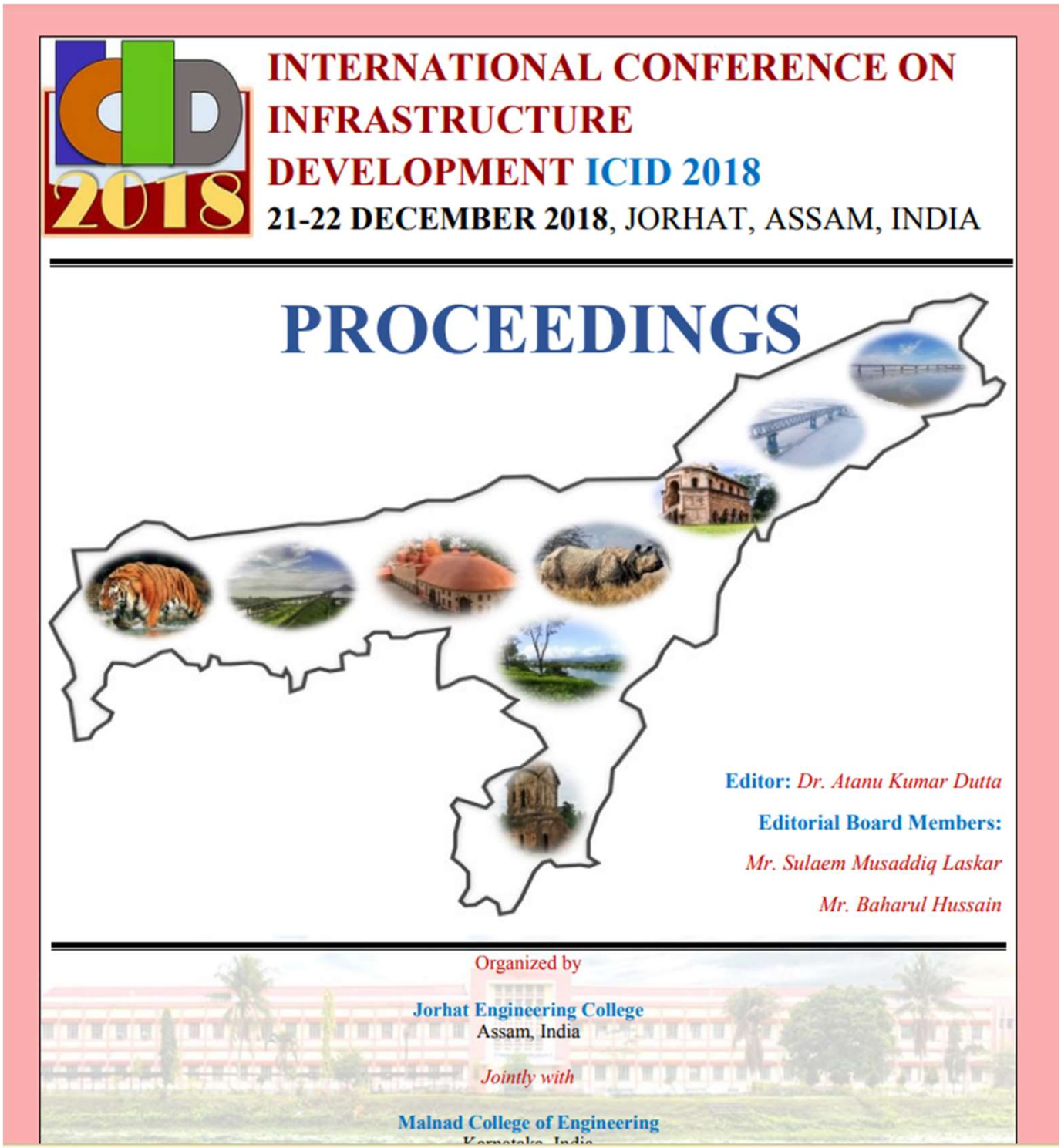
From literature, it is noted that MSW is result of unavoidable human activity, increase in disposal income (economic status), standards of living, public habits (consumption of goods and services), urban structure, local climate and technology adopted by the population of

1.1 Definition of waste

Basel Convention by UNEP define wastes "as substances or objects, which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law" (TERI-BCSD, 2014). In one of report, NSCC defined waste as "an object or substance discarded by its owner after use" is waste. Waste is also defined as any losses reduced by activities that generate direct or indirect costs but do not add any value to the product from the point of view of the client" (Mahesh D. Meghani, 2011)

1.2 Waste generation

Municipal Solid Waste management of city is exclusively the responsibility of urban local body of the city. This service consumes excess budgeted amount in treatment and disposal of waste generated in the city.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SUSTAINABLE HOMES IN STEEL: PROSPECTS FOR FUTURE DEVELOPMENT OF INDIAN HOUSING SECTOR
ICID2018_B_008

Author Poorva Kulkarni[1],
Dr.B.N.College of Architecture for women, Pune, Maharashtra, India.

ABSTRACT

Urbanization in India is resulting in significant additions to existing population because of large scale migration from rural areas. This phenomenon is coupled with a tremendous need to provide accommodation to cater to rapidly growing urban population. The unprecedented need to create a housing stock to satisfy basic needs is a matter of concern for architects, planners and decision makers. Meeting this however, is more complex than simply building more homes and shelters as current constructional trends in housing highly resource intensive, which makes sustainable building challenging Thiscalls for environmentally friendly materials, waste reduction, and a commitment to meet the long-term demands of a growing population. A good way to meet those conditions is to build with non-traditional materials in Indian context steel in one of them.

The current research paper focuses on how effectively steel can be used probably in combination with other construction material to achieve the mentioned objectives for sustainable housing. The researcher shows this new paradigm of using steel in combination with other materials for human shelters can promote sustainable housing for community living which is the need of the time.

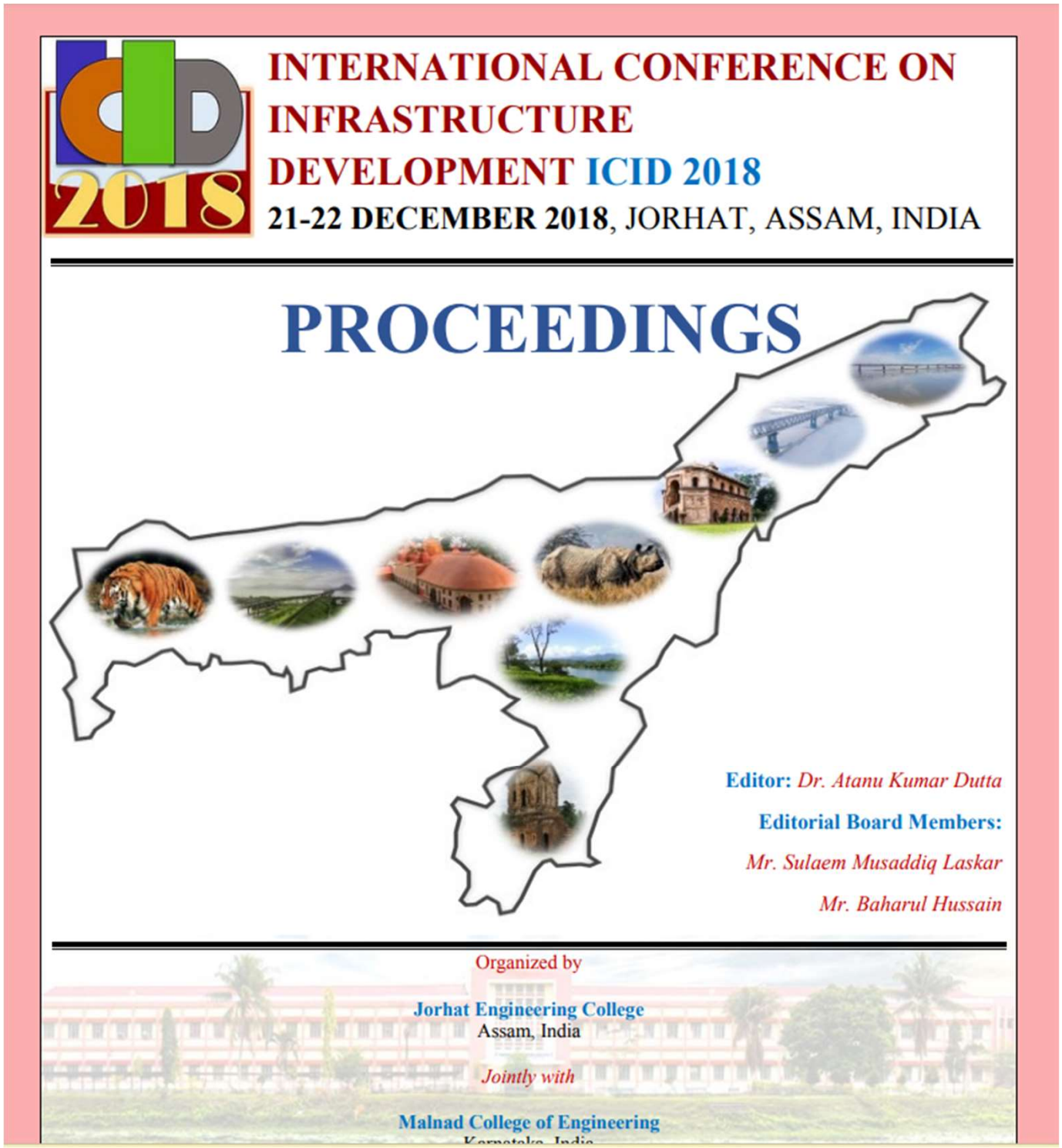
Keywords: *community living, steel, sustainable housing, urban area*

1 INTRODUCTION

Urban population in India has rapidly grown in the last century.According to census 2011,the 31% of Indian population live in urban areas. As per census data, nearly 65 million people live in slums in India.The slums are defined as 'Residential area where dwelling are unfit for human habitation'.(The Hindu,Oct 01,2013)Such spaces are unfit for human habitation due to temporary nature of the dwelling,vulnerability to get destroyed easily due to natural calamities like cyclones,earthquakes and floods.Similarly,the houses are cramped, poorly ventilated and very unhygienic due to lack of facilities of sanitation.All these factors are detrimental to health and safety of people.Due to lack of money for people staying in rural areas,people have tendancy to get migrated in urban areas for employment and try to settle in temporary shelters.These people are not in a position of establishing permanent residences with good construction material which would give them a good habitable space to live.This often results in construction of temporary shelters commonly called as slums by using any material which is available since there is no time to wait for conventional RCC construction.People are homeless and homes are required as early as

2. PRESENT NEED OF SHELTER DESIGN

Global warming and allied changes are creating hazardous conditions creating threat to environment and human health.As we are moving ahead with the pace of time,society is making determined moves towards achieving sustainability.Sustainable construction is important not only because of its economic and social contribution,but also because of observed impact on the quality of our lives.The future global challenge for the construction industry is to meet the world's growing needs ,while at the same time, restricting the burden of impact occurred by development activities. A cost effective and environment friendly design solution is required. Traditional construction practices like RCC inIndia are not at par with these requirements since they consume a lot of natural resources and create a huge waste after the life span of a building. Use of steel is very common for industrial sector in India considering the advantages of steel like ease of construction ,durability ,speed and recyclability. Unconventional practice of steel for residential construction in India provides a better solution in terms of energy consumption and environment friendliness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APPLICABILITY OF NET ZERO ENERGY BUILDING (NZEB) CONCEPT IN THE RESIDENTIAL SECTOR IN INDIA

ICID2018_D_044

Ar. Prajakta Dalal-Kulkarni[1], Dr. Vasudha Gokhale[2],
1, 2, Dr. BhanubenNanavati College of Architecture, Pune, Maharashtra, India

ABSTRACT

Building sector uses about 40% of global energy and is one of the major contributors of GHG emissions. Considering long life span of buildings, it was realised worldwide that incremental improvements in energy efficiency will not help to solve the climate change issue; this initiated emergence of new building concept of NZEBs. The Indian building sector consists predominately of the residential sector, which accounts for up to 24% of the total energy consumption. Currently, Indian residential sector is not covered by any energy related regulation which is a matter of concern. Most of the residential building stock that will be there in 2030 is yet to come-up in the country need to address the issue of energy saving. Considering the severity of the issue it is found that energy saving measures currently taken in Indian residential sector are not capable to attain sustainability targets. It has become imperative to take more advanced and efficient measures like aim for NZEBs for future construction. This paper aimed to put forward the importance of NZEB concept in the residential sector to achieve energy and emission savings, which can finally contribute to a larger goal of achieving climate change challenge taken up by India.

Keywords: NZEB, Climate Change, Energy Saving, GHG emissions

BACKGROUND

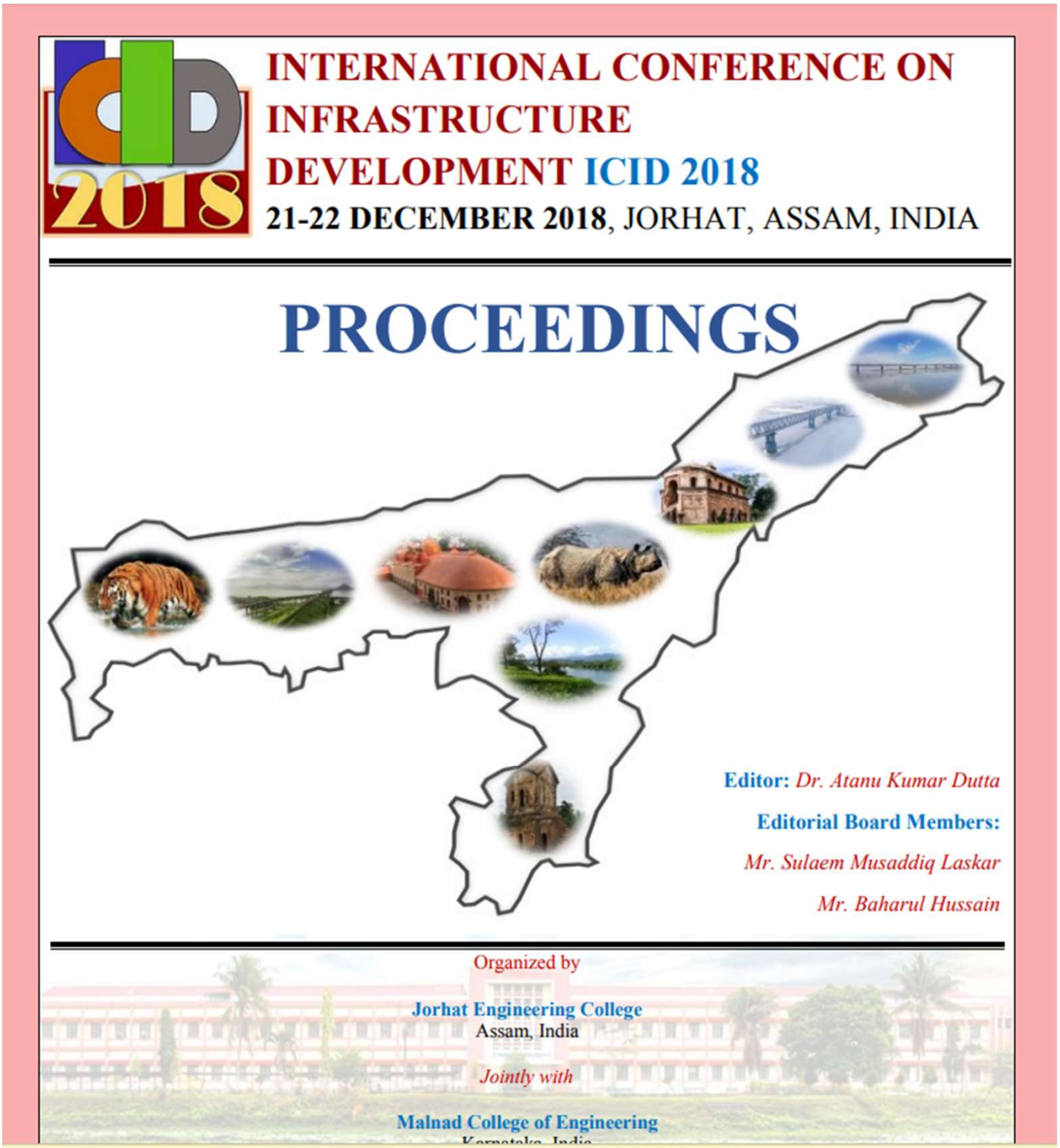
In 2015, 171 countries including India ratified Paris agreement to combat global challenge of Climate change. Keeping global temperature rise well below 2 degrees Celsius was unanimously decided as the main aim under the COP21. (UNFCCC. Conference of the Parties (COP), 2015). The Importance of building sector in reducing GHG emissions was recognised in COP21 and it was realised that it is difficult to achieve 2 degrees target without reducing GHG emissions from the building sector. Global Alliance for Buildings and Construction which was launched in COP in Paris reported that, a below 2degrees path requires building sector to avoid at least 50% of the projected growth in energy consumption through mainstreaming of highly energy-efficient, near-zero, net-zero energy and energy-plus buildings in new construction by 2030 (GABC & Report, 2016).

NZEB buildings surpass high energy performance buildings in terms of GHG reduction and energy efficiency. As per the report of World

Economy	NZEB Targets
European Union	In EU Directive it is specified that by the end of 2020 all new buildings shall be nearly zero-energy buildings and all public buildings must be nearly zero energy by 2018.
Germany	all newly constructed buildings must have a nearly zero-energy performance by 2021
UK	From **2016 for homes** and 2019 for non-domestic buildings, all new buildings in England will be required to be built to a zero-carbon standard.
California	By **2020, all new residential** construction and by 2030, all new commercial construction and 50% of existing commercial buildings in the state will be net zero energy.
US DOE	the strategic goal is to achieve, marketable **zero energy homes** in 2020 and commercial zero energy buildings in 2025
India (ECO III Project)	Vision: from2030, all newly constructed buildings in India must be NZEBs.

Figure 1. NZEB targets set by various countries (Source: Author- based on official govt. websites and various reports)

Economy	Department	Year	Policy	Objective
Japan	MLIT,METI, MOE	2008	Action plan of ZEH and ZEB	Realizing ZEH and ZEB on average for all new buildings by 2030
Korea	MLIT and other 7 Ministry	2014	The Activation Plan of ZEB Corresponding to Climate Change	All new buildings are mandatory design to achieve NZE by 2025
The	Federal government	2007	Executive Order 13514	Buildings that enter the planning process in 2020 must be designed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MODELLING EVACUATION BEHAVIOUR OF A HEALTH CARE UNIT BUILDING ON FIRE OCCURRENCE WITH MATLAB PROGRAM

ICID2018_F_009

Shirolkar Meera[1] , Gokhale Vasudha[2]
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gokhale.va@gmail.com

ABSTRACT

Emergency planning and preparedness for any kind of disaster, particularly for healthcare buildingsis a key issue for a developing country like Indiawhich are supposed to assist victims. However healthcare facility themselves are liable to face a disaster, like fire, which may necessitate the occupants' evacuation which include healthcare providers, patients as well as visitors. This paper aims at assessment of environmental characteristics of a healthcare building, and spatial behaviorsof the occupants with the help of simulation. MATLAB program, an agent based software programming is used to model the egress situations in a healthcare facility on occurrence of a fire. A virtual environment is created and checked for the required time for egress during evacuation by feeding input data close to real spatial ~~world~~ character of hospital building. setup.. The analysis will help architects and planners for designing as well as retrofitting hospital buildings aimed at a safe evacuation.

Key words: Healthcare building, MATLAB program, Simulation, Disaster, Egress

1. INTRODUCTION

Hospital evacuation in the event of a fire is a complex and unpredictable process. Recent fire incidences in healthcare facilities indicated need for attention towards the significance of a timely evacuation of occupants. Emergency evacuation can be specified as the removal of residents/populations as quickly as possible and with utmost reliability from areas considered as unsafe zones to safe locations (Saeed Osman & Bala Ram, 2011). Previous incidences have proved that the delay in evacuation time is directly proportional to the casualties or death rate during a fire disaster (Purser. & Bensilium., 2001). Pre movement time and pre-movement behaviour are prime aspects in evacuation process. Delayed evacuation had led to a large number of fatality (Fahy & Proulx, 2001). Evacuation of occupants in a health care unit is a complex process during an emergency situation and is based on critical parameters such as number of exits, location of exits (potential bottle-necks), the amount of people, the size of the floor of hospital and the simulating diverse conditions in a static or dynamic blockage of evacuation in a building.

The physical environmental characteristics of healthcare buildings were analyzed in context of safe evacuation process. With due consideration to the need for understanding the reaction of people with reference to the building s environment this research proposes MATLAB program to model the egress situations in a healthcare facility on occurrence of a fire. Here an agent-based simulation paradigm is adopted to simulate occupant movements in evacuations. The paper presents the development of a simulation model with its characteristic features and working followed by simulation analysis of a healthcare facility as a case to demonstrate the use of the proposed simulation in different scenarios as far as exposure of healthcare facilities to fire is concerned.

2. DESCRIPTION OF THE MODEL S

MATLAB is based on a matrix which is custom

Garud, A., & Rao, B. (2017, December). Urbanizing India and the Need for Natural Resources Planning. In *ASCE India Conference 2017* (pp. 558-568). Reston, VA: American Society of Civil Engineers. https://ascelibrary.org/doi/abs/10.1061/9780784482025.057

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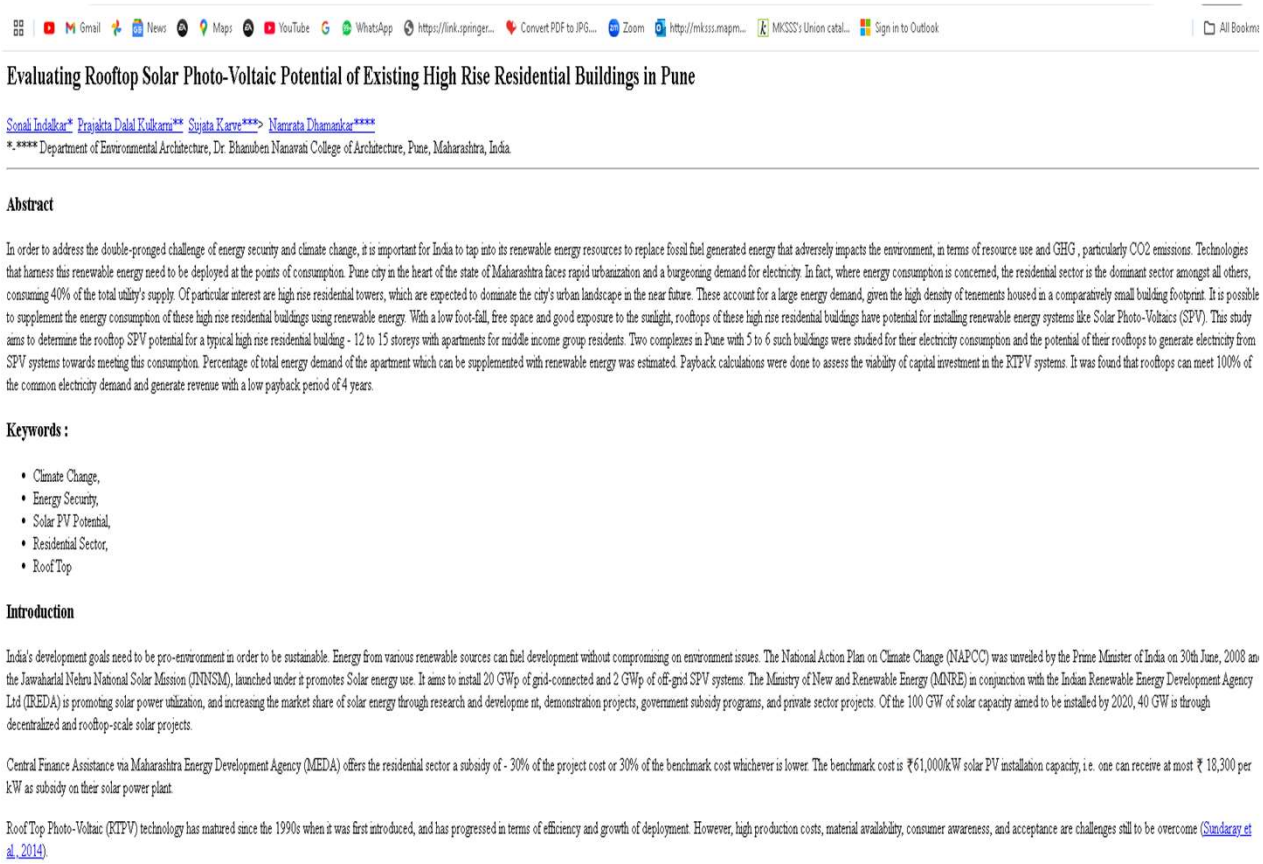

Evaluating Rooftop Solar Photo-Voltaic Potential of Existing High Rise Residential Buildings in Pune

Sonali Indalkar* Prajakta Dalal Kulkarni** Sujata Karve***> Namrata Dhamankar****
*,****Department of Environmental Architecture, Dr. Bhanuben Nanavati College of Architecture, Pune, Maharashtra, India.

Abstract

In order to address the double-pronged challenge of energy security and climate change, it is important for India to tap into its renewable energy resources to replace fossil fuel generated energy that adversely impacts the environment, in terms of resource use and GHG , particularly CO2 emissions. Technologies that harness this renewable energy need to be deployed at the points of consumption. Pune city in the heart of the state of Maharashtra faces rapid urbanization and a burgeoning demand for electricity. In fact, where energy consumption is concerned, the residential sector is the dominant sector amongst all others, consuming 40% of the total utility's supply. Of particular interest are high rise residential towers, which are expected to dominate the city's urban landscape in the near future. These account for a large energy demand, given the high density of tenements housed in a comparatively small building footprint. It is possible to supplement the energy consumption of these high rise residential buildings using renewable energy. With a low foot-fall, free space and good exposure to the sunlight, rooftops of these high rise residential buildings have potential for installing renewable energy systems like Solar Photo-Voltaics (SPV). This study aims to determine the rooftop SPV potential for a typical high rise residential building - 12 to 15 storeys with apartments for middle income group residents. Two complexes in Pune with 5 to 6 such buildings were studied for their electricity consumption and the potential of their rooftops to generate electricity from SPV systems towards meeting this consumption. Percentage of total energy demand of the apartment which can be supplemented with renewable energy was estimated. Payback calculations were done to assess the viability of capital investment in the RTPV systems. It was found that rooftops can meet 100% of the common electricity demand and generate revenue with a low payback period of 4 years.

Keywords :

- Climate Change,
- Energy Security,
- Solar PV Potential,
- Residential Sector,
- Roof Top

Introduction

India's development goals need to be pro-environment in order to be sustainable. Energy from various renewable sources can fuel development without compromising on environment issues. The National Action Plan on Climate Change (NAPCC) was unveiled by the Prime Minister of India on 30th June, 2008 and the Jawaharlal Nehru National Solar Mission (JNNSM), launched under it promotes Solar energy use. It aims to install 20 GWp of grid-connected and 2 GWp of off-grid SPV systems. The Ministry of New and Renewable Energy (MNRE) in conjunction with the Indian Renewable Energy Development Agency Ltd (IREDA) is promoting solar power utilization, and increasing the market share of solar energy through research and developme nt, demonstration projects, government subsidy programs, and private sector projects. Of the 100 GW of solar capacity aimed to be installed by 2020, 40 GW is through decentralized and rooftop-scale solar projects.

Central Finance Assistance via Maharashtra Energy Development Agency (MEDA) offers the residential sector a subsidy of - 30% of the project cost or 30% of the benchmark cost whichever is lower. The benchmark cost is ₹61,000/kW solar PV installation capacity, i.e. one can receive at most ₹ 18,300 per kW as subsidy on their solar power plant.

Roof Top Photo-Voltaic (RTPV) technology has matured since the 1990s when it was first introduced, and has progressed in terms of efficiency and growth of deployment. However, high production costs, material availability, consumer awareness, and acceptance are challenges still to be overcome (Sundaray et al., 2014).

Faculty: Dr. Sujata Karve

Title of the Paper: Evaluating The Impact of Rooftop Greening Methods on The Urban Microclimate at A Neighborhood Level (Residential)

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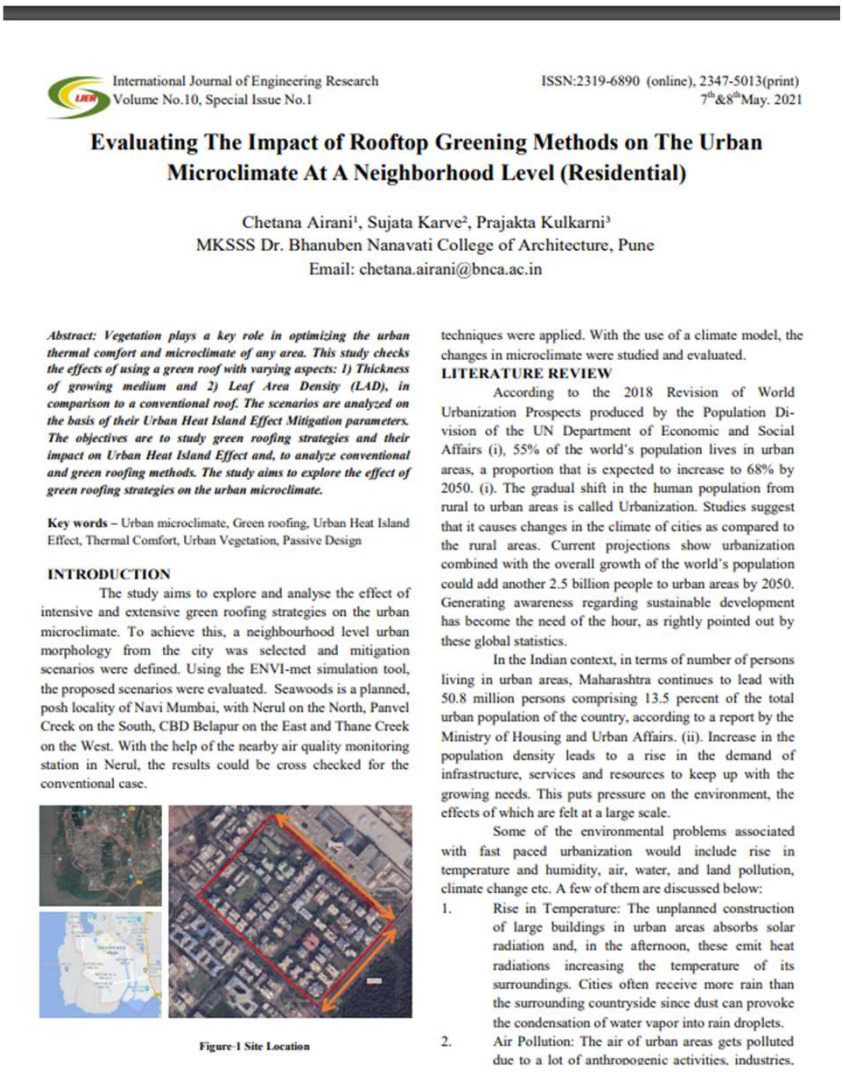
7th&8thMay. 2021

M.Arch Papers



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Volume No.10, Special Issue No.1

ISSN:2319-6890 (online), 2347-5013(print)
7th&8thMay. 2021

Evaluating The Impact of Rooftop Greening Methods on The Urban Microclimate At A Neighborhood Level (Residential)

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MKSSS Dr. Bhanuben Nanavati College of Architecture, Pune
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Abstract: *Vegetation plays a key role in optimizing the urban thermal comfort and microclimate of any area. This study checks the effects of using a green roof with varying aspects: 1) Thickness of growing medium and 2) Leaf Area Density (LAD), in comparison to a conventional roof. The scenarios are analyzed on the basis of their Urban Heat Island Effect Mitigation parameters. The objectives are to study green roofing strategies and their impact on Urban Heat Island Effect and, to analyze conventional and green roofing methods. The study aims to explore the effect of green roofing strategies on the urban microclimate.*

Key words – Urban microclimate, Green roofing, Urban Heat Island Effect, Thermal Comfort, Urban Vegetation, Passive Design

INTRODUCTION

The study aims to explore and analyse the effect of intensive and extensive green roofing strategies on the urban microclimate. To achieve this, a neighbourhood level urban morphology from the city was selected and mitigation scenarios were defined. Using the ENVI-met simulation tool, the proposed scenarios were evaluated. Seawoods is a planned, posh locality of Navi Mumbai, with Nerul on the North, Panvel Creek on the South, CBD Belapur on the East and Thane Creek on the West. With the help of the nearby air quality monitoring station in Nerul, the results could be cross checked for the conventional case.

Figure-1 Site Location

techniques were applied. With the use of a climate model, the changes in microclimate were studied and evaluated.

LITERATURE REVIEW

According to the 2018 Revision of World Urbanization Prospects produced by the Population Division of the UN Department of Economic and Social Affairs (i), 55% of the world's population lives in urban areas, a proportion that is expected to increase to 68% by 2050. (i). The gradual shift in the human population from rural to urban areas is called Urbanization. Studies suggest that it causes changes in the climate of cities as compared to the rural areas. Current projections show urbanization combined with the overall growth of the world's population could add another 2.5 billion people to urban areas by 2050. Generating awareness regarding sustainable development has become the need of the hour, as rightly pointed out by these global statistics.

In the Indian context, in terms of number of persons living in urban areas, Maharashtra continues to lead with 50.8 million persons comprising 13.5 percent of the total urban population of the country, according to a report by the Ministry of Housing and Urban Affairs. (ii). Increase in the population density leads to a rise in the demand of infrastructure, services and resources to keep up with the growing needs. This puts pressure on the environment, the effects of which are felt at a large scale.

Some of the environmental problems associated with fast paced urbanization would include rise in temperature and humidity, air, water, and land pollution, climate change etc. A few of them are discussed below:

1. Rise in Temperature: The unplanned construction of large buildings in urban areas absorbs solar radiation and, in the afternoon, these emit heat radiations increasing the temperature of its surroundings. Cities often receive more rain than the surrounding countryside since dust can provoke the condensation of water vapor into rain droplets.
2. Air Pollution: The air of urban areas gets polluted due to a lot of anthropogenic activities, industries,

Link to website of the Journal: https://www.dypatilarch.com/assets/pdf/NSC-RIA-2021.pdf

Faculty: Dr. Sujata Karve

Title of the Paper: Perception of Designers on the Use of Sustainable Interior Materials and Finishes and Their Awareness about Their Effect on Indoor Air Quality

Authors: Rucha Nachane, Sujata Karve

Name of the Journal/Proceedings: Regional Conference on Research in Architecture (in association with MASA)

ISBN/ ISSN No: ISSN - 2319-6890 (online), 2347-5013(print)

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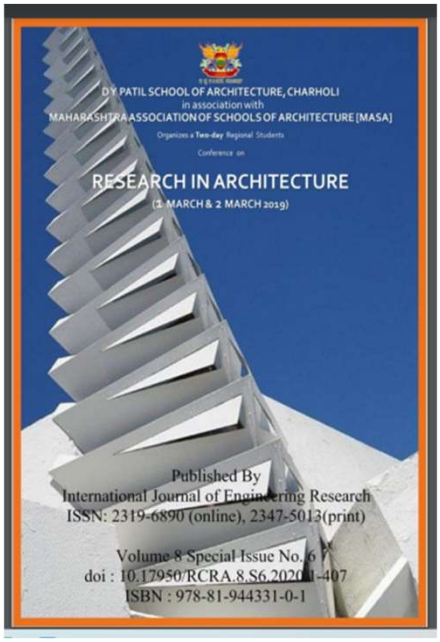

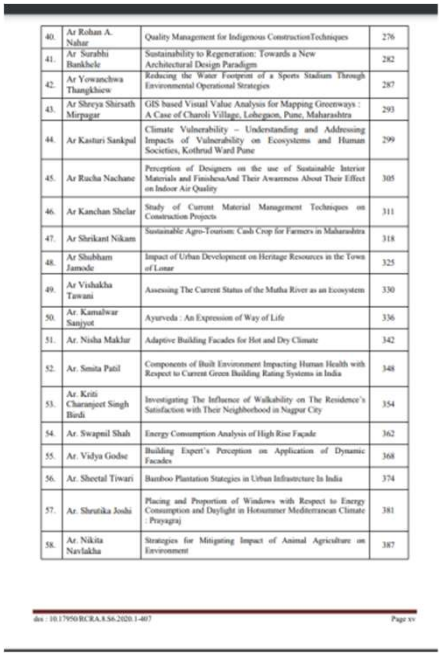

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1 & 2 March 2019

Perception of Designers on the Use of Sustainable Interior Materials and Finishes and Their Awareness about Their Effect on Indoor Air Quality

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Abstract : Environmental issues are increasing day by day and construction industry is one of the major contributors to it. Buildings impact the environment and so does an interior space as it gets refurbished more frequently. Sustainability helps to achieve a long-term balance between environment and livelihood. It is necessary to develop a positive environmental attitude amongst architects and interior designers to deliver sustainable solutions. Use of sustainable interior materials and finishes enhances the indoor air quality as well as reduce the load on planet's natural resources. In interior design, the designer has greater hold on sustainability through material selection. As there exists no proper regulation, there is a necessity to investigate designer's initiative of incorporating sustainable materials into real practice. The research aims to understand the perception of architects and interior designers regarding sustainable interior materials and finishes and their awareness regarding the effect of these materials on the indoor air quality. An online questionnaire survey of architects and interior design practitioners was conducted and sample size of 100 respondents was taken for study. The questionnaire was based on incorporation of interior surface materials and finishes in the design, sustainable practices, indoor air quality and impact of materials on human health and well-being. The findings of the research suggest that though designers are aware of the importance of sustainable materials they are not focusing on this parameter. Environmental impact and health factor are the least considered criteria for choosing materials. Also, there is lack of knowledge amongst designers as well as contractors for installation of these materials on site.

Keywords: **Sustainable interior materials, Interior design, Perception, Indoor Air Quality**

Introduction

Sustainability in interior design

The world is facing many key issues like climate change, depletion of resources and biodiversity, allergies and stress, water scarcity, etc. The construction industry is a major contributor to the environmental problems stated above. In order to sustain lifestyle requirements, a healthy economy, reduced global warming and decreased toxic gas emissions is essential to conserve environmental resources (Rashdan and Ashour, 2017).In 1987, the final report of "Brundtland Commission" was released, Our Common Future. It defines sustainability as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". (Stark and Park, 2016).

As the environmental issues are reaching its peak level, it's our responsibility to take action for curbing the adverse effects. It is in the hands of the designer to responsibly make design choices. A designer should make appropriate choices for architectural design as well as interior design. Traditional interior design practices have adverse effects on the environment due to the significant use of natural resources during the manufacturing and installation process (Rashdanand Ashour, 2017).In traditional design practices priority was given to aesthetics and functional need, while environmental and health impacts, initial and life-cycle cost were of the least priority. Commercial interiors get renovated after every 5 -7 years, that increases the burden on the natural resources if sustainable materials are not used (Hayles, 2015).

Faculty: Dr Aarti Varma
Title of the Paper: Home Gardens as Locales for Urban Ecology
ISBN/ ISSN No:

RACK 3: CULTURE

HOME GARDENS AS LOCALES FOR URBAN ECOLOGY

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Abstract

Home gardens, even though a small fragment of urban landscape, cumulatively add up to the quality of open spaces in a city. They display unique and honest expressions of human-nature association; a significant realm of anthropological studies. Literature studies assert that this association is mostly guided by Personal values. Theories focussing on personal values categorize them into varied classification encompassing social, cultural, economic and ecological domains. Ecological domain constitutes of values like inclination towards environmental protection and enhancement, respect for nature, and planting based on biodiversity principles. This study attempts to understand home gardens as places influenced by ecological value.

The paper is a part of the research aimed at exploring the influence of personal values in home gardens in the city of Pune [India]. The methodology involved a mixed method approach using an interview schedule, in-depth interviews and case study research, at homes of the respondents. Amongst a total sample of 90 from varied socio-cultural background, 44 % showed a high score for ecological value irrespective of the size of the garden. The ecological value was found to overlap with values like love for nature, hedonism and cultural values. The study also identified themes like Ecological Planting, supporting biodiversity and local wildlife, and sustainability through conservation of resources and use of eco-friendly materials as significant strategies to shape home gardens. This paper discusses the significance of ecological value shaping home gardens in generating prudent urban ecological landscape.

Keywords:*Home Gardens, Personal Values, Ecology, Nature, Pune,*

Introduction

The relationship between Humans and Nature within cities shapes Urban Ecology. Along with understanding Urban Ecology as study of *"biological patterns and associated environmental processes in urban areas"*, it also suggests that *"Urban ecology is the study of ecosystems that includes humans living in cities and urbanising landscapes"* (Endlicher et al., 2007). Hence the domain of Urban Ecology includes Human-Nature interaction within urban open spaces. Open spaces at regional levels are mostly devoid of human interaction; hence they exhibit a natural ecosystem. As these locales start getting urban, the human presence begins to increase and hence the expression of such urban ecological systems is an outcome of

Faculty: SHUBHADA KAMALAPURKAR
Title of the Paper: Pilgrim and Resident Perceptions of the Cultural Landscape of Ayodhya, India
Proceedings Title: Sacred Landscapes of Pilgrimage in India: Patterns and Practices"
ISBN/ ISSN No:

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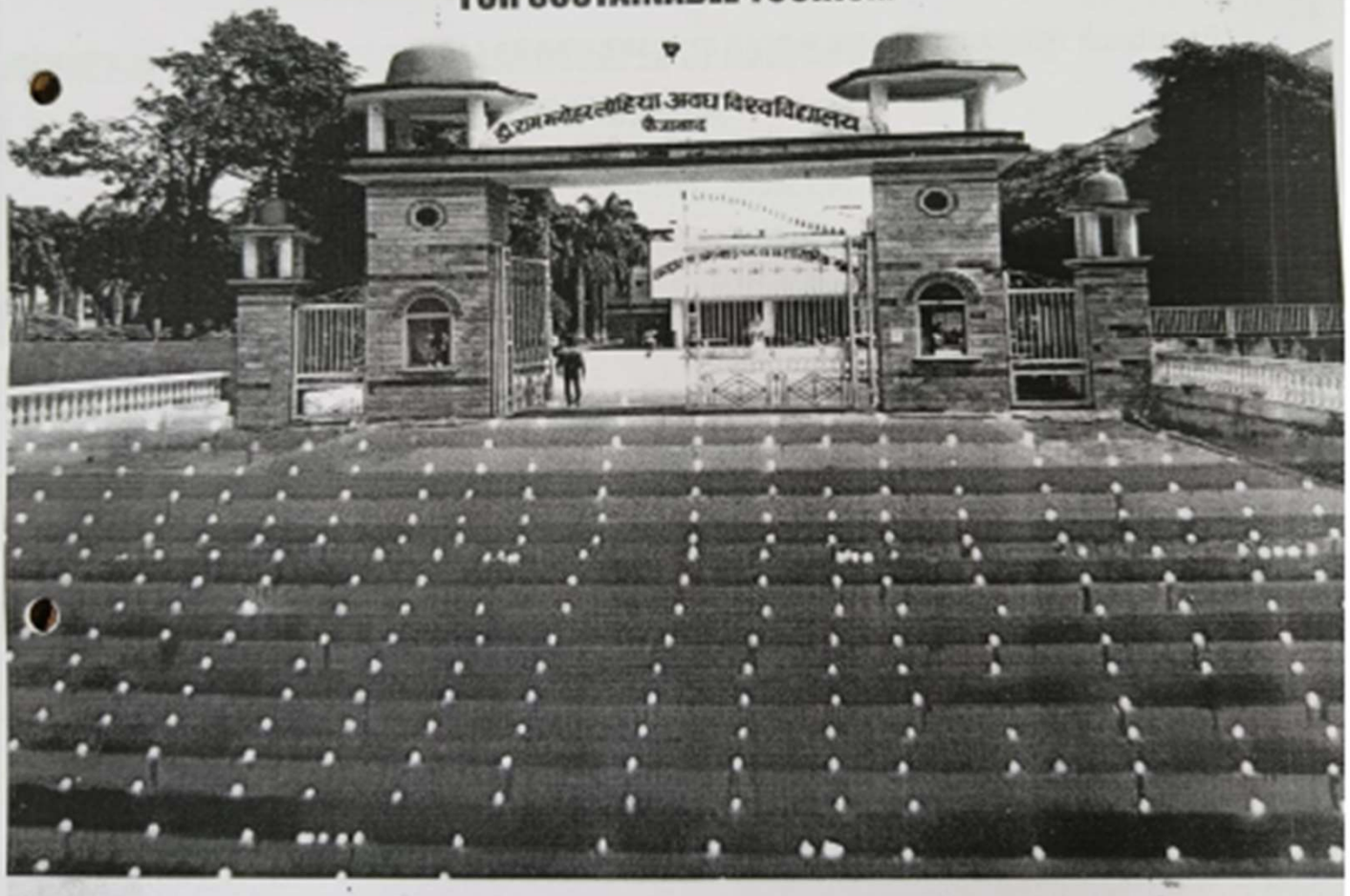

under the aegis of - The 7-ACLA, Asian Cultural Landscape Association

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Ayodhya Sodh Sansthan (Dept of Culture, Govt. of U.P.), Ayodhya
Indira Gandhi National Centre for the Art, New Delhi

Organised by :

Dr. RAMMANOHAR LOHIA AVADH UNIVERSITY, FAIZABAD, (U.P.) 224001, INDIA

Pilgrim and Resident Perceptions of the Cultural Landscape of Ayodhya, India

Dr Shubhada Kamalapurkar, B N College of Architecture, Savitribai Phule Pune University, Pune, Maharashtra, India

Abstract

Ayodhya has been regarding as one of the seven most important pilgrimage cities for Hindus. It is known to be the birthplace of Lord Ram and setting for the epic Ramayana. However, it came into spotlight with the demolition of Babri Masjid. Although attention in the last quarter of a century has been focused on the contested site of Ramjanambhoomi, Ayodhya has many other sacred sites—hills, groves, water structures, and the Sarayu riverfront—imprinted with the Ramayana narrative. With the purpose of understanding the cultural heritage embodied in the landscape, semi-structured interviews were conducted with 73 pilgrims and residents in January and October 2018. Results indicate that Ramjanambhoomi, birthplace of Ram, Nageshwarnath Temple associated with Shiva, Kanak Bhavan and Hanumangarhi, where Hanuman resides, are equally significant along with the holy River Saryu. This is reflected in the maps drawn by respondents. The goals of pilgrimage were stated as visiting temples, bathing in the River Sarayu, celebrating festivals such as Ramanaomi, and performing parikrama (circumambulation) of Ayodhya at various scales. Pilgrims and residents were asked to give their opinion on ways to resolve conflict over the contested site. There is overwhelming support for rebuilding the Ram Temple at Ramjanambhoomi and the majority believe that the dispute should be resolved amicably through mutual dialogue between the two communities. Pilgrims complained about lack of public hygiene, toilets, and signage, and residents expressed concern over neglect of sacred water bodies and denudation of sacred groves. The survey findings are relevant to conservation and development of Ayodhya's cultural landscape, in particular the heritage district of ancient Ramkot with its constellation

Faculty: Dr. Sujata Karve
Title of the Paper: Feasibility of Low Cooling Technologies in Residential Sector
Authors: Mankar Dhanashri, Karve Sujata
Name of the Journal/Proceedings: 7th International Conference on Energy Research and Development, ICERD 2019
ISBN/ ISSN No:
Link to website of the Journal: https://www.techstreet.com/ashrae/standards/feasibility-of-low-energy-cooling-technologies-in-residential-sector?gateway_code=ashrae&product_id=2098248

Feasibility of Low Energy Cooling Technologies in Residential Sector

Mankar, Dhanashri; Karve, Sujata. **ASHRAE Topical Conference Proceedings; Atlanta**, (2019).

Full Text

Headnote

ABSTRACT:

This paper deals with the applicability of low energy cooling technologies in the residential sector in Nagpur region, India. In this paper, different low energy cooling technologies are simulated in a residential module to analyse its energy consumption. Past studies have shown the advantages of low energy cooling technologies. Many studies show cases of its applicability in the commercial sector. This study majorly focuses on the comparison of those technologies in terms of energy consumption in residential sector.

KEYWORDS:

Low Energy, DesignBuilder, Radiant Cooling, Energy Consumption, Evaporative Cooling, Ground Heat Exchanger

INTRODUCTION:

Air conditioning need is not a luxury anymore but a necessity for making life bearable in the countries suffering hot summers. In India, 40% of the electricity is consumed by space cooling. The percentage of air conditioning is significantly increasing over the period in residential sectors as well. Its impact on greenhouse gas emissions is enhanced by the fact that these cooling systems are usually electrically driven. India is poised for an explosion in room air conditioning that may require as many as 300 new electric power plants in the next 10 to 15 years, according to a Lawrence Berkeley National Laboratory specialist in international energy. (McMahon, 2017).

Looking at the figures above, energy efficiency and thermal comfort becomes a priority for India which reflects in the recent revisions of ECBC 2018 which emphasizes the need to design for Low energy cooling technologies.

Link : https://www.proquest.com/docview/2501936297?sourcetype=Conference%20Papers%20&%20Proceedings

Two-Days International Conference On Futuristic, Resilient and Smart Urban Development	
Day 1: February 22, 2019	
Time	**Audotorium – C BUILDING**
09.00-10.00 hrs	Registration followed by Breakfast, High Tea
10.00-11.05 hrs	Opening Ceremony...
11.05-11.15 hrs	Networking Break
11.15-12.00 hrs	Session I: Smart City and Related Development: Some Observations...
	Chair: Dr. Pratap Raval, Professor, COEP, Pune
	Keynote Speaker: Dr. Gajanan M. Sabnis Emeritus Professor, Howard University, Washington, DC, USA
12.00-12.45 hrs	Session II: North American Initiatives Towards the Smart City Developments
	Chair: Dr. Alka Kote, Professor, DYPIET, Pimpri, Pune
	Keynote Speaker: Dr. R. R. Dhole Principal Engineer, Subsea 7, Houston, TX, USA
12.45-01.30 hrs	Session III: Smart Masdar City, UAE and Experiences between UAE and India for further Management Interaction...
	Chair: Dr. A. G. Kharat, Director (Academics)
	Keynote Speaker: Dr. Elias B. Sayah President, Sayah Engineering, MENA, Abu Dhabi, UAE
01.30-02.15 hrs	Networking Lunch Break
02.15-03.00 hrs	Session IV: Harmonizing Energy, Environment and Economic Security through Innovative Technologies for Sustainable Smart Cities...
	Chair: Dr. R. S. Karale, Professor JSPM's RSCOE
	Keynote Speaker: Dr. Deepak Waikar Associate Faculty, Overseas University, Singapore
03.00-03.15 hrs	Networking Tea-Break
03.15-04.55 hrs	Paper Presentations-Track I : MBA Seminar Hall (A1 Building) Session Chair : Dr. S. S. Shahapure/Dr. R. S. Karale Faculty Co-ordinator: Prof. Kilabanur Pramod
	Paper Presentations-Track II : Block A116 (Civil) Session Chair: Dr. Minaxi Rai-Sharma Faculty Co-ordinator: Prof. Sachin Belgundkar

2019
Faculty: Ar Vrinda Panse Dr Sujata Karve, Rahul Navale
Title of the Paper: Understanding Transit oriented Development and Its Effect on Livability
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Understanding Transit oriented Development and Its Effect on Livability

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Abstract **— Increased population and urbanisation over few decades, across the world, has caused stress on the infrastructure and transportation among the cities. Transit oriented development (TOD) is emerging as an efficient mechanism for addressing issues of urban sprawl and congestion in the cities. If effectively implemented, it can lead to sustainable development along the transit corridors. However, there are concerns, whether TOD will bring good quality of living for the residents near transit corridor. This study aims to understand the relationship between various parameters of TOD and its effect on liveability in neighbourhoods near upcoming Metro corridors in Pune, India. The study tried to identify the various indicators of TOD. The effect of these indicators was analysed by applying a questionnaire survey of respondents along the metro corridor who would be the most affected due to the development. The analysis brought forth the factors affecting livability in the neighbourhood around the Metro corridor. This analysis will also help to understand people's perception that can give a framework for planning and designing in TOD based development.**

Keywords- Transit Oriented Development, liveability, density, Metro corridor, Pune, India

I. INTRODUCTION

Due to increasing population and growing economy, India is urbanising at a tremendous speed over past few decades. As per Census 2011, urbanisation has increased from 17.29% in 1951 to 31.6 % in 2011. Indian urban population is estimated to grow up to 600 million in 2030 as per McKinsey Global Institute report 2010. It has caused uncontrolled urban expansion due to migration from rural areas. Cities are not planned considering transport systems for this unprecedented growth. Increased transportation and vehicle use has caused infrastructural projects across India. However, there are some bottlenecks in implementation works. Few of them being lack of funding, lack of synchronisation in State and local Government or unawareness of people about the proposed development etc. [1] Local people, who are the stakeholders, many times do not have clarity about the project and they oppose it. People's misconceptions about the development may create various hurdles causing hindrance to local authorities in implementation. Realisation of the project and understanding its implications is important for better results. Therefore, it is necessary to understand the perception of people about the different policies of the government for successful implementation of the same.

Pune is the second largest city in Maharashtra and the eighth most populous city in India. It has a population of 31 lakh, with a population density of 12,777 persons per sq. km as per Census 2011. It has witnessed much industrial growth since 2000. Rapid urbanization has put the city's travel infrastructure at stress. To ease the situation, Pune Metro, a Metro rail based rapid transit system, is now under construction to serve the city of Pune. Pune Municipal Corporation (PMC) has proposed norms for 'Transit Oriented Development' for an area falling within 500 m from the metro stations. PMC has allowed increase in FSI up to 4, as a tool for investment in metro.

According to Calthrope, (1993) Transit Oriented Development (TOD) is an efficient mechanism, to control urban sprawl and create sustainable cities where compact, mixed-use neighbourhoods are planned around public transit stops. TODs are significant in improving livability of urban life and building a desirable city image. High density, mixed land use, and pedestrian-friendly design are three main

2019

Faculty: Sujata Kulkarni, Prajakta Kulkarni, Dr Sujata Karve

Title of the Paper: Need of energy conservation measures in existing residential buildings

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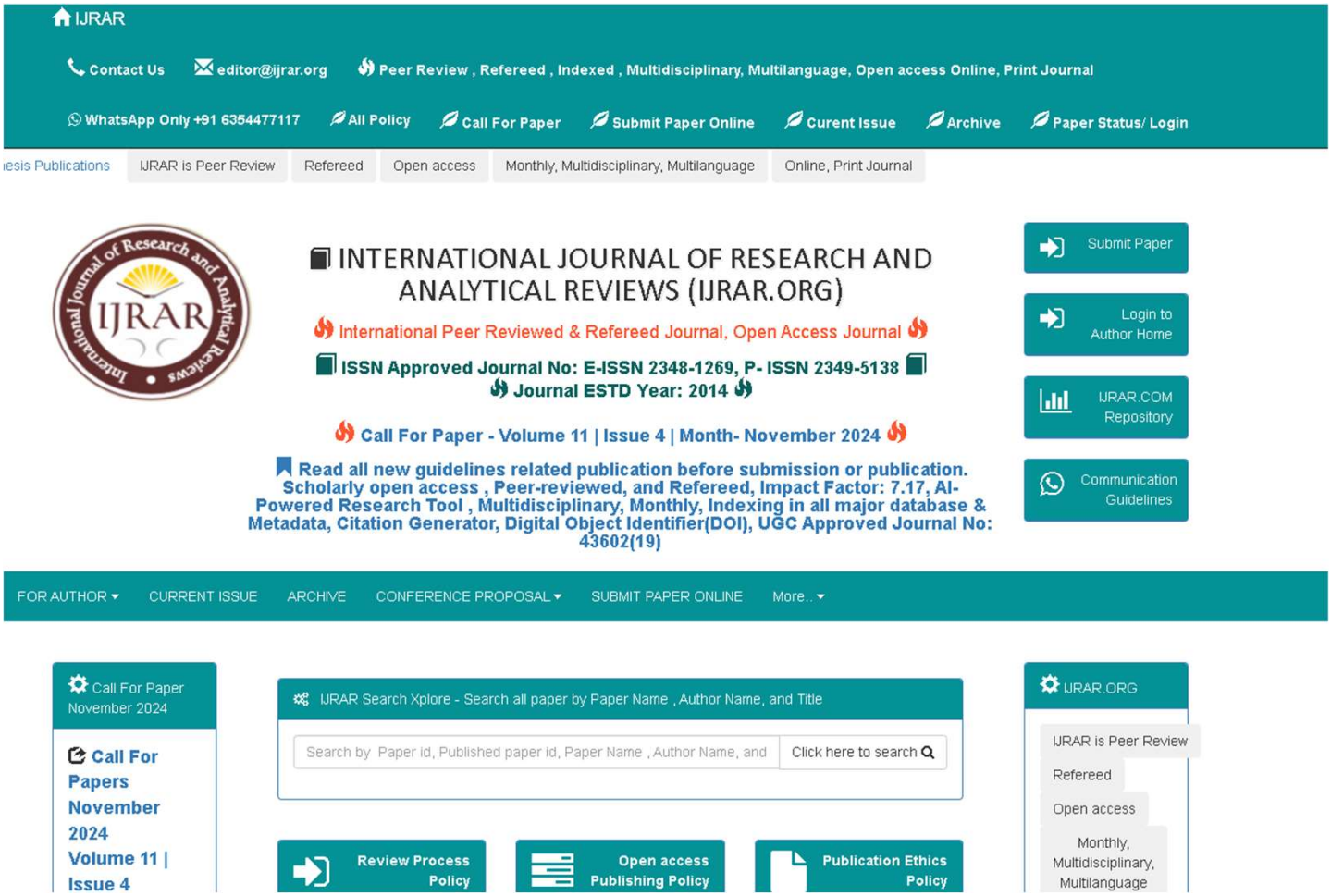

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Need of Energy Conservation Measures in Existing Residential Buildings

Ar. Sanika Kulkarni[1] Prof. Dr. Sujata Karve[2] Prof. Prajakta Dalal Kulkarni[3]
[1]PG Student Department of Environmental Architecture, [2]HOD, [3] Faculty
[1]Department of Environmental Architecture
[1]Dr. B.N. College of Architecture, Pune, India

ABSTRACT: India, like many countries is an emerging economy which is urbanising rapidly. The construction sector plays a vital role in this economic growth and development but exerts a lot of environmental pressure. The sector is a huge consumer of resources as well as a generator of pollutants during the construction as well as the operation phase. The building sector consumes 30% of the total electricity consumption out of which 72% is consumed by the residential sector. New residential buildings are constructed by incorporating measures of energy efficiency as well as use of renewable energy but existing residential buildings are often neglected in the energy efficiency debate. India's existing residential buildings have a great potential and opportunities in reducing the total energy consumption. Thus the aim of the research is to understand the energy usage of the existing residential buildings and the need of energy conservation measures for the same. The existing residential building stock in Pune was identified and studied for its energy usage. Different typologies of residential buildings based on area was identified and its energy usage pattern was studied from the energy bills for one year. As these buildings will continue to consume the same amount of energy (or more) and are here to stay for at least 30-40 more years, it becomes a matter of great concern. Furthermore, the EPI (Energy Performance Index) are calculated for the selected samples and compared with the EPI of a Green Rated building. Analysis is led to the understanding of energy efficiency achieved in these buildings. The research emphasizes on the need to improve the existing residential buildings and prioritizes the methods of energy efficiency upgrades.

Key words: energy efficiency, energy performance index

I. INTRODUCTION

Climate change can be defined as (Wikipedia) – "The statistical distribution of weather pattern when that change lasts for an extended period of time (i.e. decades or millions of years)." Climate change is no more just as environmental issues. But, it has become a developmental concern globally. The effects of climate change present many challenges that are threatening not just to our way of life but also putting the future on unstable grounds. The relationship between the energy and Earth's Climate largely depends on the source of energy. The most common way to produce energy is by burning of fossil fuels. Fossil fuels account for the majority of global energy use. Burning of this fuels, releases waste gases like CO2 in the atmosphere. These are greenhouse gases which ultimately result in increase in temperature. This is the relationship between energy and climate.

The changes that are being experienced in the climate are affecting all our lives. Every industry is affected by the current changes but there is a big impact on the construction sector. Buildings that can withstand the colder winters as well as hotter summers and high winds are now necessary (S.N.K.Pravin, 2017). All around the world, cities have been enhancing its economic, cultural and social attractiveness increasing population and infrastructure. The recent world climate reports stress the increasing severity and duration of heat waves which is a concerning climate change. In a global context of climate change, the urban area's sustainability and its environmental footprint need to be investigated and addressed, as an attempt to reduce negative impacts. (Margot Pellegrino) The increase in annual temperatures has brought forth the spells of hot weather across the globe, which is directly affecting the countries with warm climate like India. As a growing nation, India has to focus on the impacts of climate change on the developments and take initiatives for sustainability in nature. Presently, India faces the challenges of making the energy available which is needed to fuel this economic growth. India's energy policies face many challenges, such as, addressing its energy poverty, managing its high energy import dependence and finding way to solve the electricity gap. The current available energy is insufficient to meet its needs. Statistics suggest that 600 million Indians lack electricity while 700 million still depend on traditional fuels. (Gangwar, 2013) India's current per capita emissions are one third of the world average and 14% of the per capita emissions of OECD (Organisation for Economic Co-operation and Development) member countries. Thus India is increasingly engaged in reducing carbon emissions and addressing environmental degradation.

II. LITERATURE REVIEWS

The importance of climate change is referred with the global environmental challenges which has the implications for water supply, food production, health, energy, etc. it is also stated that addressing this climate change requires a good scientific understanding as well as a coordinated action at national and global level by Sneh G, 2013. Similarly, Margot P, Marcos S and

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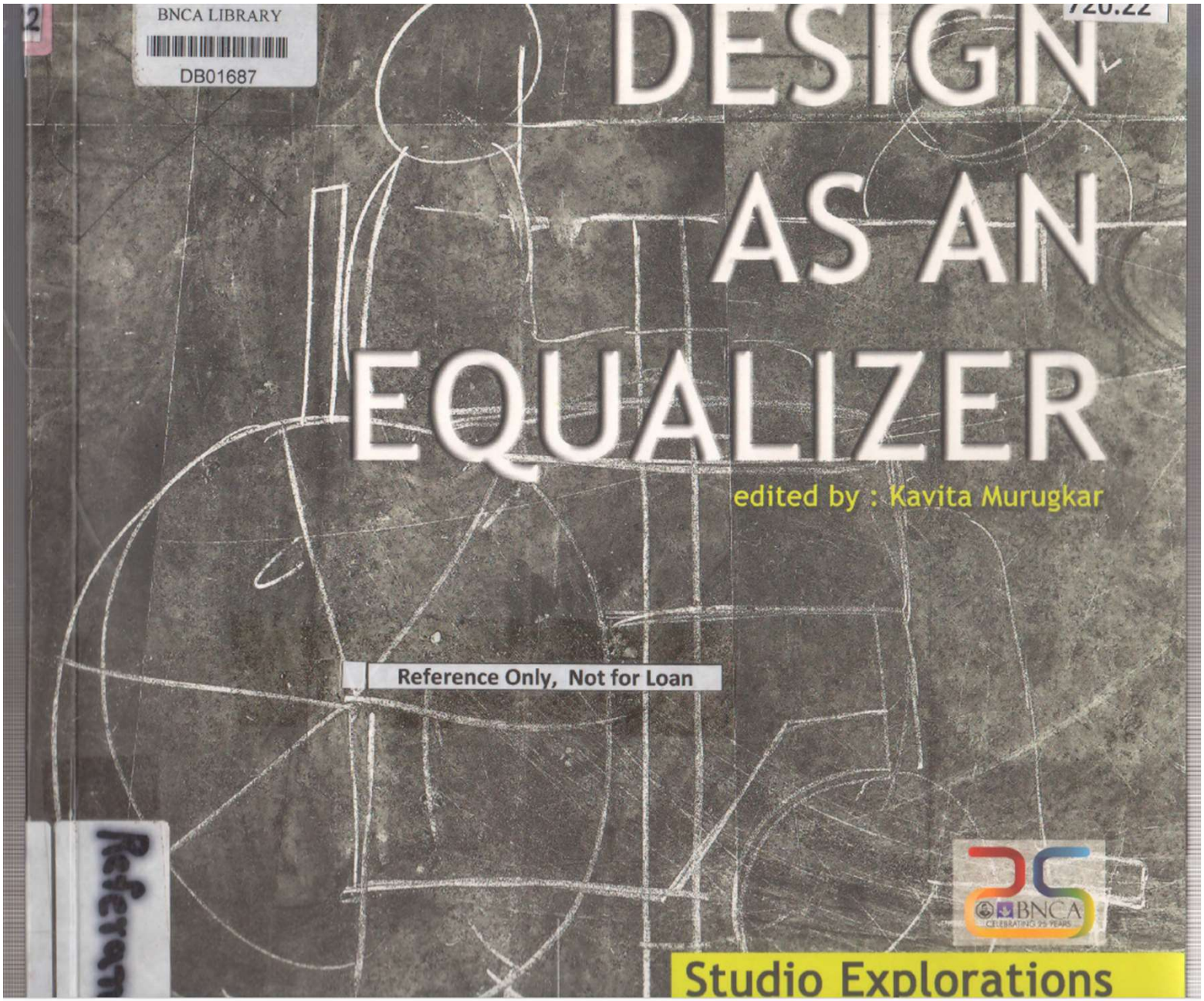
Books and chapters in edited volumes/books published and papers published by faculty at BNCA in national/ international conference proceedings per teacher during last five years:

Prof. Kavita Murugkar
Book Title : design as an Equalizer
ISBN : 978-93-5382-738-0



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Kavita Murugkar, founder of Universal Design Centre, is an architect and academician with over 20 years experience, teaching at BNCA, Pune. She is a strong Universal Design evangelist and nationally recognised Accessibility expert. She is also a recipient of the NCPEDP-MPHASIS Universal Design Award 2014 for her contribution in promoting people centric and inclusive design education and practice across India.

PROF. KAVITA MURUGKAR

FROM THE EDITOR

This monograph is an effort to compile representative studio work of students of architecture on the emerging concept of Universal Design in architectural education and practice, exploring relationships between disability, diversity, design, democracy, equity, self-reliance and physical environment. Hence the name, Design as an Equalizer.

Architectural Design is a social art and has the potential to facilitate social inclusion and perform as an EQUALIZER. However, such a thought usually remains as a general idea, and is hardly taught in the schools of architecture and minimally practiced by professional architects. Architectural education and practice is even today un-empathetic to issues of disability and diversity. Barriers in architecture continue to hinder people with disabilities (PWD) and deprive them from opportunities, access and activities that are otherwise available to the 'able bodied'. In words of our mentor and inspiration Prof. Abir Mullick, people with disabilities, who do not conform to the standards of 'normalcy' are victims of the biased and blinded design processes that treat them 'differently' through specialized designs and separate them from the rest. Generations of architects have been coming into the profession without being made to realize that people with

Faculty: **Dr Poorva Kulkarni**

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Technology transfer for addressing demand for sustainable housing in 2050

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National Conference-2020

ENVISIONING INDIA 2050

CONCERNS OF URBAN ENVIRONMENT

(NCEI)

23rd and 24th January, 2020

Technology transfer for addressing demand for sustainable housing in 2050.

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ABSTRACT

India is projected to add 300 million new urban residents by 2050 and it will need to build climate-friendly cities to address the challenge of accommodating the needs of the growing population. The energy consumption from residential buildings is predicted to rise by more than eight times by 2050 it is of vital importance for India to develop energy-efficiency strategies to limit the current trend of unsustainable escalating energy demand for the residential sector. This analytical research discusses the rising trend of urbanization in India and the looming urban housing shortage. It examines the challenges of projecting the long-run sustainable demand for new residential construction. It further deliberates on the constraints faced by construction sector to bridge the gap through use of innovative building material and technology in housing. Various technologies that could be used for restraining growth in energy consumption in the Indian residential sector focusing on steel composite buildings will be investigated. The need for technology transfer from conventional to advanced technology in residential sector discussed. It will present energy saving potentials that can be achieved with use of steel construction as an alternative method of construction against conventional building practices. Finally, the study dwells on the measures that can be taken by various stakeholders which can make use of steel feasible for the urban masses in India.

Keywords: Steel, composite, technology transfer, housing..

INTRODUCTION

Indian construction industry has been considered as a labor-intensive, low-tech industry with low productivity. It is found that while technological innovations and sciences developments have already reshaped many other industrial sectors Indian construction sector has been left behind noticeably. Construction industry facing challenges to responds to change technical, economic and social conditions, there is an increasing need of changing construction technique at the earliest. Many techniques like mass production and automation was introduced in the early twentieth century for producing products in large quantities with relatively low cost which reshaped manufacturing industry especially in the sector of automobile, aircraft, train etc. In building sector industrialized construction became popular during the post-war period, due to the huge demand in housing. This kind of change in construction methods is still at nascent stage in India particularly in housing sector.

MAGNITUDE OF HOUSING PROBLEM IN INDIA

The end of tenth plan assessed the total housing shortage as 24.71 million dwelling units for 67.4 million Households, where 98% of this shortage was in the Low Income and Economically Weaker Sections (EWS) segment. The situation is not projected to improve at the end of 11th Plan but it is expected to escalate to 26.53 million houses for 75.01 million households. As per the estimate of the National Housing Bank (NHB) and NCAER the size of the underserved segment is over 100 million households where most of this population have limited or no access to affordable housing. According to Department of Industrial Policy and Promotion (DIPP), the

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Importance of India's Net Zero Energy shift in residential Sector by 2050

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ABSTRACT

Currently world is facing biggest challenge of reducing greenhouse gas (GHG) emissions to combat climate change. Building sector is identified as one of the major contributors of GHG emissions. As per UNEPs report, Buildings use about 40% of global energy and emit approximately 1/3rd of GHG emissions. It is expected that by 2050, building floor area globally will be doubled, triggering energy demand and related GHG emissions. On the background of Growing building energy demand and CO2 emissions, growing energy resource shortage and dependency on non-renewable energy sources-initiated emergence of new building concepts, mainly Net zero energy buildings (NZEBs). Considering long life span of buildings, it was realised worldwide that incremental improvements in energy efficiency will not solve the problem and building sector needs transformation towards zero net energy use. The Indian building sector consists predominately of the residential sector and as per CEU data, by 2050, 85% of floor space will be in residential use, while 15% will be used for commercial purposes. As per the Bureau of energy efficiency's (BEE) report the Indian residential sector consumes 75% of the total energy consumed by the building sector. Currently, Indian residential sector is not covered by any energy related regulation which is a matter of concern. This paper aimed to put forward the importance of NZEB concept in the residential sector for the residential building stock that will be there in 2050 to achieve energy and emission savings, which can finally contribute to a larger goal of achieving climate change challenge taken up by India.

Keywords: NZEB, Climate Change, Energy Saving, GHG emissions

INTRODUCTION

India is experiencing tremendous growth in the construction sector. It is projected that around 700 - 900 million m2 of commercial and residential space will be built every year in India, which is similar to building two Mumbai's every year (Sankhe *et al.*, 2010). As per the scenario analysis produced by the Centre for Climate Change and Sustainable Energy Policy (3CSEP) of the Central European University (CEU), by 2050, 700% increase in the building energy consumption and CO2 emission is estimated in India as compared to 2005 levels (Prajakta et al., 2019).

Building industry is one of the largest consumers of energy and thus has a high potential of saving the consumption as well. Currently, the residential and commercial sectors account for 31% (22% residential and 9% commercial) of total electricity use and consumption in these sectors is rising at 8% annually (Kumar, Kapoor and Group, 2010). As energy consumption from residential buildings is predicted to raise by more than eight times by 2050 under the business as usual scenario, it is of vital importance for India to develop energy-efficiency strategies focused on the residential sector to limit the current trend of unsustainable escalating energy demand(Rawal and Yash Shukla, 2014).NZEBs have the potential to provide long term solutions to the challenging situation regarding future energy demand (NHB and KFW, 2014) This paper tries to understand importance of NZEB shift in residential sector by 2050.

BUILDING SECTOR AND GHG EMISSIONS:

Faculty: Namrata Dhamankar
Title of the Paper: Estimating Potential Solar Energy on Rooftops using Unmanned Aerial Vehicle
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Estimating Potential Solar Energy on Rooftops using Unmanned Aerial Vehicle

Namrata Dhamankar ; Prajakta Kulkarni ; Nidhi Dixit All Authors

Abstract: Unmanned Aerial Vehicle (UAV) also commonly referred to as drones has found its application in many field of engineering, infrastructure and also the built environment in... **View more**

Metadata

Abstract:

Unmanned Aerial Vehicle (UAV) also commonly referred to as drones has found its application in many field of engineering, infrastructure and also the built environment in the recent past. With the use of drones being used for commercial purposes increasing there is a lot of emphasis of how to use these drones for as many applications as possible. This paper highlights the use of drones for mapping large scale rooftop areas to assess solar energy system installation potential. The results show that the drone technology is advantageous compared to the conventional manual survey method in terms of cost, time and resources required when used for large scale areas.

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Process of Residential Redevelopment: A case of an Indian City

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ABSTRACT

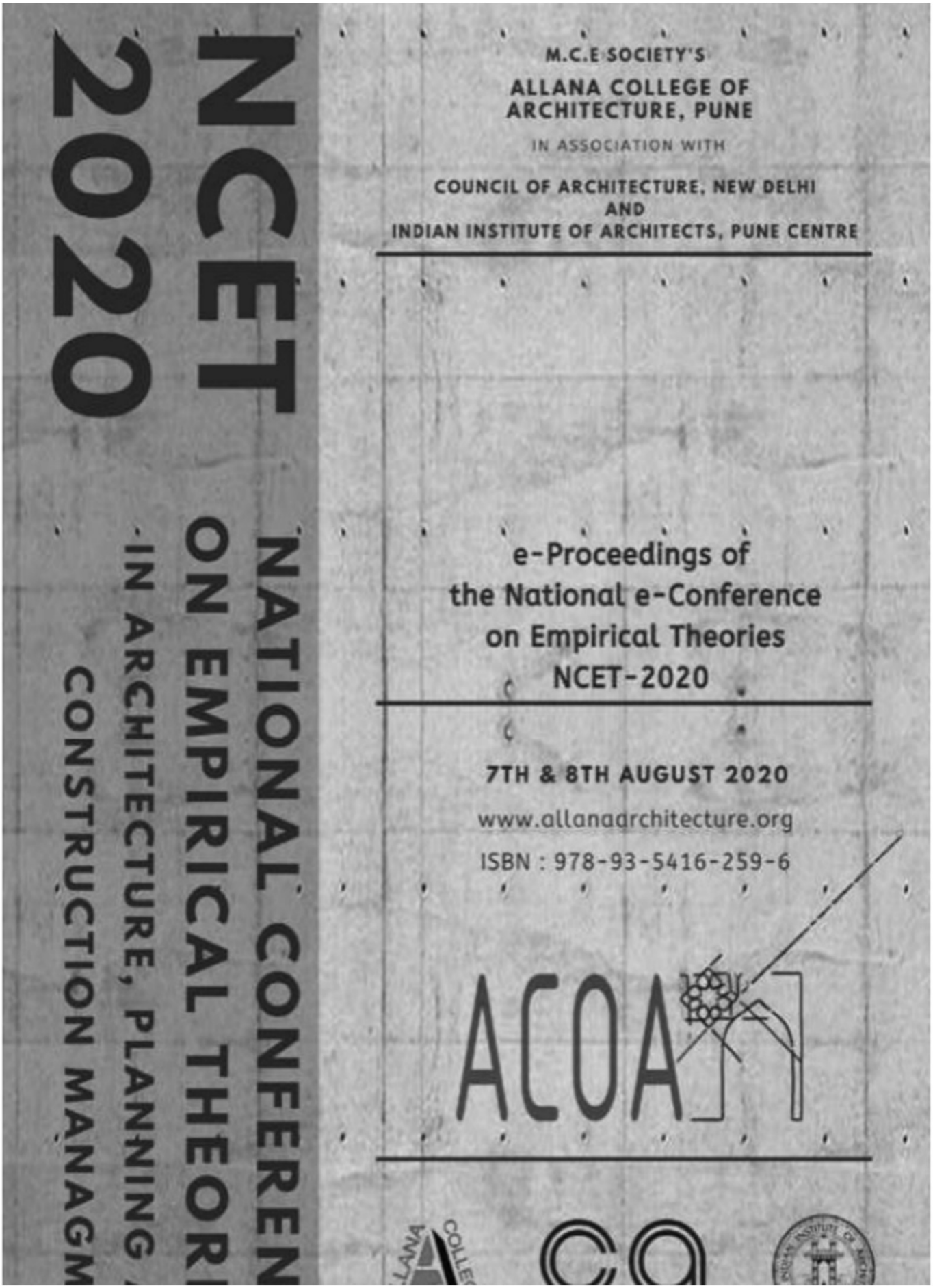
Redevelopment of residential properties is a relatively recent phenomenon that has been witnessed in most of the Indian cities in the last decade. The buildings that were constructed post-independence is facing ageing problems. Also, functional life of these buildings is ending due to lifestyle changes of the residents of these buildings. Family growth and subsequent increase in space requirement, aging of original occupants and their changing needs, change in lifestyles, lack of lifts, parking and other facilities are making these developments less comfortable for their occupants. In this scenario, housing societies approach builders to undertake redevelopment of their residential property. There are government guidelines published in 2009 and revised in 2019 for undertaking redevelopment of co-operative housing societies in the state of Maharashtra. However, co-operative housing societies follow these guidelines partially to some extent. This research paper investigates the redevelopment process followed in practice and analyses to what extent government prescribed process is followed. Qualitative data were collected through face to face interviews with developers, architects and managing committee members of housing societies to understand the redevelopment process followed in practice. A process led by government and followed in practice are presented in the form of flow charts and comparisons. Reasons of difference in the processes are analyzed through qualitative data and conclusions are drawn.

Key words: Redevelopment Process, Co-Operative Housing Society, Government Resolutions etc

INTRODUCTION

Redevelopment of residential properties is a relatively recent phenomenon that has been witnessed in most of the urban areas. Suburban sprawl increased in metro-cities during 1960-1990 to decongest core cities. The middle income- middle age group shifted to suburban areas to overcome crowding issues in core cities. The residential developments that took place to accommodate this white collared middle-class population were characterized mainly by mid-rise buildings without lifts, parking and other high-end amenities such as a club - house, swimming pools, gymnasiums and shopping facilities etc. that are commonly seen in current township developments in many cities in India.

The buildings that are more than 25 years old are facing maintenance issues such as leakages of plumbing and drainage pipes, leakages through walls and roofs due to ageing. This is adding up to the maintenance cost of these buildings. The original occupants of these buildings are ageing population. Lack of lifts, parking and other facilities are making these developments less comfortable for them. However, the place attachment and inability to purchase a new suitable residential unit in some other location are pushing the residents of these suburbs for undertaking redevelopment of their properties (Gajendragadkar, 2018). In this scenario, housing societies/ owners of residential properties approach builders to undertake redevelopment of their residential property. There are government guidelines for undertaking redevelopment of co-operative housing societies. However, most of the co-operative housing society follows these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This book of proceedings of NCET-2020 is divided in five sections. **Total Pages: 342**

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		UG PAPERS	

UG-26

A SURVEY ON PEOPLE'S OPINION ABOUT SMART CITY INITIATIVE IN AUNDH AREA

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ABSTRACT

Smart cities base their strategy towards developing cities in order to improve quality of life of the people residing in the area by the use of modernized technology and by assisting the use of spaces in urban area.There is a need to further develop smart networks in smart cities to meet the needs of the people living in these areas,hence making the smart public spaces attractive for the people becomes important.Government of India has taken a modern and innovative initiative for the betterment of the society.This paper aims to find perception about smart city initiatives of citizens residing in Aundh area of Pune city.It also aims to understand the awareness among citizens regarding such initiatives taken by the Government towards development of cities.Data was collected from a certain number of citizens residing in Aundh Area for a minimum of two years.Findings show that there were some difficulties faced by the citizens like non availability of public washrooms, traffic congestion. etc. Although they were quite satisfied with the overall execution of smart city project in this area. Data collected through interviews of shop keepers in the area and residents is analysed in the light of planning and design initiatives under smart city program.

KEYWORDS:

Smart City Initiatives, Development of cities, Users'satisfaction, City Beutification, Social Life etc.

INTRODUCTION

Smart city initiative is one of the important steps towards development of cities.A Smart city is a city which is very innovative and futuristic with respect to the infrastructure, transportation,real estate, and also market availability. Smart cities base their strategy towards developing cities in order to improve the quality of life of the people residing in the area by the use of modernized technology and also by assisting the use of spaces in urban area. The government of India has taken a modern, futuristic and innovative initiative for the betterment of the society. Watson (2015) had introduced the term Fantasy city which is similar to smart city, with regards to the concepts, various ideas about how beautifully cities can be developed.

In 2015, the Government of India proposed the National Smart City Mission for adding a new face to the urban development whereby the government of India aimed to develop 100 smart cities across the country along with making them sustainable and citizen friendly. Factually, 99 cities have been selected to be upgraded as a part of smart city development as of January 2018. According to the smart city project, public places in the proposed smart cities would be given Wi-Fi internet access. Smart city initiatives not only includes new development of a city but also redevelopment of the existing infrastructure would be part of it. Pune was one of the first twenty smart cities of India.

PUNE SMART CITY INITIATIVES

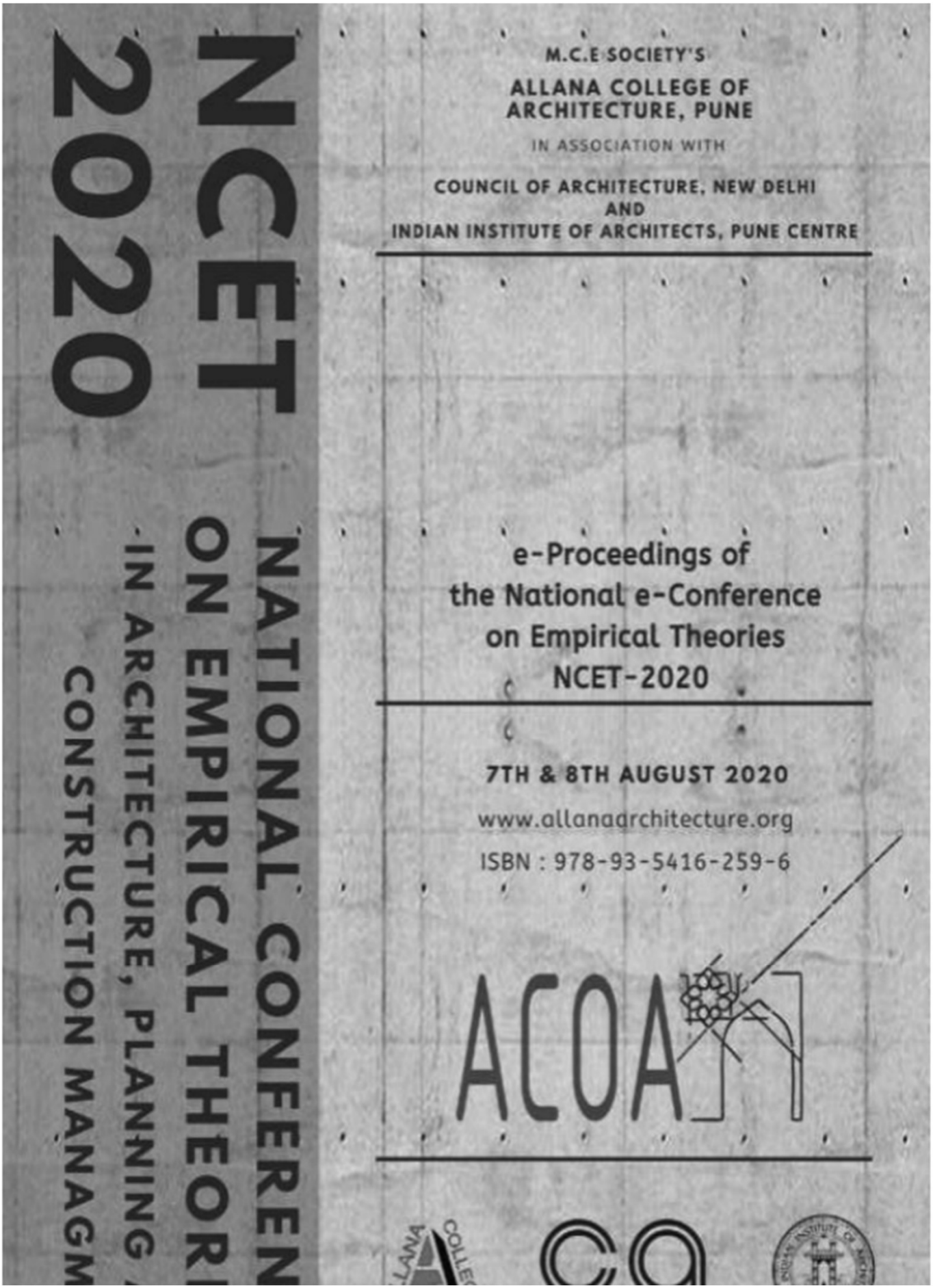
Pune had ranked second, among the 98 nominated cities,in the First round of Smart Cities competition organized by the department of Urban development of India. Pune has already implemented some of the initiatives which are as follows:

- Smart Public Bicycle Sharing
- Free Wi-Fi
- Smart Street Redesign
- Well lit streets
- Smart Place making
- Citizens Engagement
- Wide Footpaths for pedestrians
- Seating Accommodation
- Smart parking project
- Tactile paving.

Pune Smart City has implemented these projects successfully. E connectivity and Transport Hub were some of the initiatives under smart city planned by the "Smart City Development Corporation Limited"(PSCDCL) in Aundh Area. Some other proposed initiatives are as follows.

- Computerised system for transport and an IT network for the bus rapid transport system.
- Around 200 poles with close circuit cameras
- E Buses and E Rickshaws for BRT Route
- Smart Mechanized Street Sweeping
- Awareness campaign by visiting societies
- Bicycle on rent
- Pedestrian friendly roads / bicycle-friendly roads

Although there have been smart [redacted] feedback from citizens taken to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THE EFFECT OF NEIGHBOURHOOD CHARACTERISTICS AND AMENITIES ON THE PROPERTY VALUE

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ABSTRACT

Neighbourhood is a geographical unit in which there are social similarities. However, the perception of a particular neighbourhood is different for different people. The factors such as both amenities and dis-amenities are significant factors that decide house price in a particular neighbourhood. Urban residential house prices depends on two broad factors: (1) Tangible factors -characteristics of the individual houses and (2) Intangible factors -neighbourhood characteristics, surrounding environment, housing characteristics and services. The location of a property is the most obvious factor that affect the pricing of house like the centrality of location etc. The supply and demand, interest rates, property, market performance, population, sizes detonate and facilities, aesthetics are also factors that determine house price. The aim of this paper is to study the factors or key determinants that affect the value of property in a locality. In this study, the determinants such as housing characteristics, neighbourhood characteristics and amenities are considered. The study is carried out through physical observations and interviews with builders, real estate agents. On-site observations are carried out to study housing characteristics, neighbourhood characteristics and amenities in a particular area. A study area is divided into 5 distinct sub-areas with distinct neighbourhood characteristics and amenities and the impact of these factors on housing price is studied.

KEY WORDS - *House Price, Hedonic Pricing Model, Neighbourhood Characteristics, Amenities, Housing Characteristics.*

INTRODUCTION

House is a day to day need of a man. A house provides us with shelter or accommodation. While buying any house or a property a buyer looks at various aspects such as its location, amenities, accessibility and its price. In this papers ''house'' refers to the whole consisting of both the structure and the plot. House price is basically the price at which a house is sold or offered for sale. House price is dependent on a large number of factors. Price of a dwelling consists of the housing characteristics and the land on which it is build. House price study is helpful for the stakeholders or owners to take decisions to buy, sell, and invest in the property. This paper studies the factors that affect the housing prices in positive or negative ways.

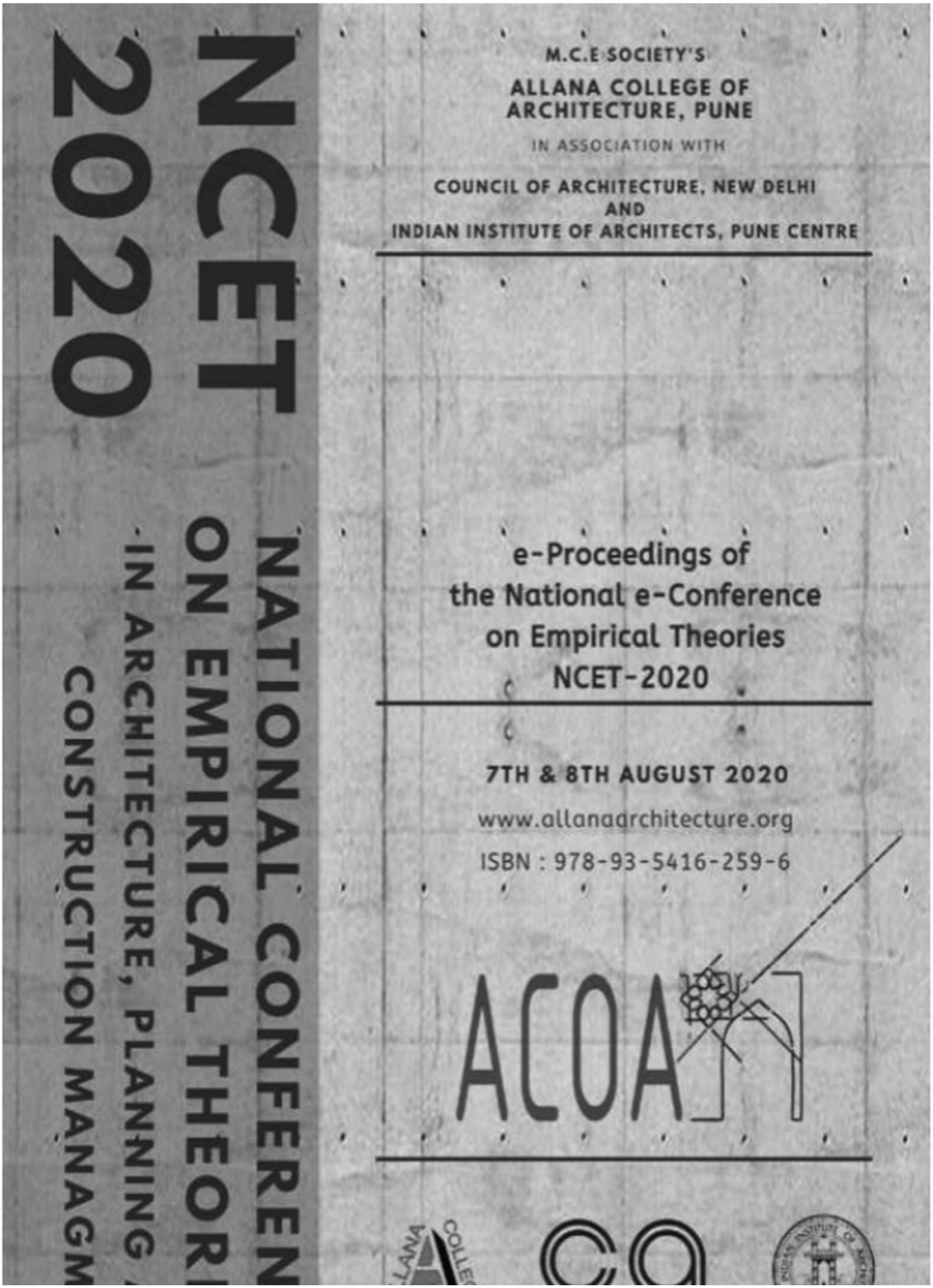
LITERATURE REVIEW

Various researchers have considered different factors as a key determinants for estimating the housing price. Some researchers have considered combination of various factors. The factors such as location of a property, housing characteristics of the house building and the neighbourhood characteristics are also taken into consideration and their effect on housing price is studied. Hedonic pricing is a model that identifies price factor. According to the theory that price is determined on both internal characteristics of the good and property to be sold and even external factors / surrounding factors affecting it. HPM is used by different researchers to estimate the value of different types of commodities in market .It is widely used as pricing model in the real estate market. Many researchers have also considered location as the only element as a key determinant in the theory of hedonic pricing. Some of the researchers state that the location from the central business district as an important factor where as some of them have stated the proximity to the other employment opportunities as an extra element deciding housing price. The proximity to school, hospitals, and churches malls, convenient shopping, neighbourhood facilities etc. are also taken into consideration to study its relevance to housing price. Although some researchers have considered the proximity to commuting opportunities as a factor affecting house price in their hedonic pricing model instead of location view to parks , green spaces, rivers , sea , bridges, flyovers, gardens, income in neighbourhood, ethnic accepts etc. In the hedonic price model (HPM). Environmental characteristics or environmental quality such as air quality water quality, these pollution levels etc. is also considered as a part of neighbourhood characteristics. Other factors that are considered in the theory of hedonic model includes 1) distance to working place. 2) Hospitals 3) neighbourhood facilities 4) schools 5) shopping malls 6) view to garden / parks, etc.

Mallick and Mahalik (2014) stated that not only housing prices but also speculative prices plays an important role when housing is not just considered from consumption point view but also from asset creation point view (investment). The hedonic models are used for analysis of trends and sales comparison of housing prices etc. Abidoye and Chan (2017) have identified 360 independent variables from 125 research articles they reviewed which used HPM to obtain housing price in market. Babawale (2011) investigated the impact of neighbourhood churches on residential property values with particular reference selected areas. The hypothesis that proximity to a church has no effect (positive or negative) on house price is tested in his study. He used a standard hedonic pricing model using a sample of 450 rented apartments (flats) across the study area. The results revealed that neighbourhood churches, particularly the large once impact negatively on the value of nearby residential properties.

Musa (April 2015) studied the impact of neighbourhood characteristics on residential property value suggesting that both neighbourhood amenities and dis-amenities play very significant role in the formation of residential housing prices. The study suggested the use of many explanatory neighbourhood variables to justifiably estimate the impact of neighbourhood characteristics on residential property prices / values. Islam (2012) estimated the impact of neighbourhood characteristics, particularly adjacent ravines, and amount of public land and incidence of crimes on house prices in the locality. Results of the paper indicated that house- hold income and adjacency to ravines positively correlated and they both independently contribute to house price. Crime variable has a negative impact on the house prices, but their impacts were negligible.

Various researchers have considered different attributes as a key determinant for defining housing price. For eg.1) based on the location of the housed 2) housing characteristics (structural) 3) neighbourhood characteristics 4) environmental marketing 5) occupancy 6) selling and financial issues that affect the housing prices .The structural aspect or housing characteristics may include attributes like floor area, no of rooms, no. Of bedrooms, age of building cost of repair & maintenance, plot size, availability of parking, basement, fire places and HVAC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MECHANIZED PARKING IN REDEVELOPMENT PROJECTS- UTILITY AND OTHER ISSUES

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ABSTRACT:

Redevelopment of residential properties is being witnessed in most of the urban areas at the escalating rate in the last decade. The buildings that were constructed between 1961 and 1991 are facing aging problems such as leakages of the roof, water supply and sanitation pipes and deterioration of other building parts. The residential development that took place to accommodate then the middle-class population was mid-rise buildings having small or moderate size units and without lifts, parking and other high-end amenities. The change in space requirements over a period of time, lifestyle changes of occupants and lack of facilities such as lifts and parking and also the problems due to aging make the buildings unfit for the use of its occupants. For these reasons, buildings are redeveloped to overcome these issues. Lack of parking is one of the significant reasons for redevelopment. There is a significant change in parking norms as prescribed by current development control rules. In redevelopment projects, mechanized parking has become a standard system to cater to increased parking requirements. However, the age of original members of old apartments ranges between 65years to 85 years or even more. This paper questions the efficacy of mechanized parking for this age group as far as the ease of use is concerned. The paper explores the actual parking requirements of original members of redeveloped apartments and how do they use mechanized parking provided by developers. A questionnaire survey of original society members is conducted in redeveloped societies to identify the issues related to mechanized parking. A visual survey is also conducted to check the occupancy and use of mechanized parking in these societies. Based on the empirical data, conclusions are drawn with regard to the use of mechanized parking and related issues.

KEYWORDS:

Residential Redevelopment, Mechanized Parking, And Parking Requirements, Etc.

INTRODUCTION:

In the last two decades with the rapid increase in cars, the need to find available parking space most efficiently and efficient car parking management has become a necessity. Also, over the decades, the parking norms have been changed, since many families are now having more than one vehicle. This is leading to the inadequacy of parking in the basement parking or ground-level parking for multi-housing projects. When the basement gets full, residents are forced to park their vehicles on the road, which compromises security and adds to congestion. As a solution, many residential societies in India are now offering multi-level car parking to residents. This helps in the effective utilization of available space and gives residents the flexibility to use the facility at any time. As the facility requires less space, it leaves a lot of open space for landscaping, creating a healthier environment for residents. Besides, it reduces the possibility of disputes over parking space.

The use of mechanized parking is a very recent development in redeveloped residential buildings to accommodate the increased requirement of parking. This study analyzes the efficiency of mechanized parking in redeveloped buildings, weather mechanized parking is useful or not to the residents of the redeveloped buildings, and what issues are these people facing while using mechanized parking.

METHODOLOGY:

This research includes both the qualitative and quantitative methods of data collection. Quantitative data is collected through a questionnaire survey. A case study method is employed to understand the efficiency of mechanized parking in redeveloped buildings using mechanized parking systems. The survey was carried out in 10 redeveloped buildings in Karvenagar and Kothrud, Pune, India, where redevelopment of these buildings is observed in the escalating rate. A minimum of 10% of residents from a single redeveloped building was interviewed to understand the parking requirements, the efficiency of use of mechanized parking, and issues faced by the residents while using the parking systems.

LITERATURE REVIEW:

In this section, the literature on the growth in the number of automobiles and the demand for parking is studied. Like most of the Indian cities, Pune is witnessing a rush in urban growth that is also accompanied by growth in private vehicle ownership. It is said that the Regional Transport Office in Pune registers almost 500 new vehicles every day. With such explosive growth in the number of automobiles, the demand for parking escalates, resulting in footpaths and available open spaces being encroached by formal or informal parking lots. [1]

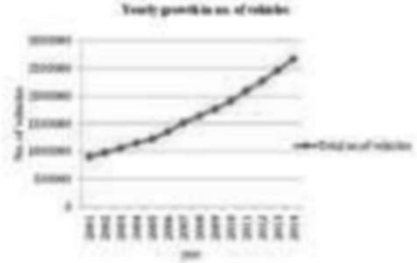

Fig. no. 1- Vehicular growth in Pune
Source: [2]

In India, more than 25 lakh automobiles are sold every year which further leads to parking problems on a daily basis. To offer some relief to vehicle owners, the Government had worked on many proposals of multi-level parking in metro cities, some of which have already been built. However, many more are required to solve the problem. [2]

In this section, the literature on types of mechanized parking available in the market is studied through the internet search engine.

Types of Automated multilevel car parking systems:

Puzzle Type: This system has more than two levels of parking. Its design has a structure that enables the use of all parking entrances and exits on the ground level. The parking pallets move left, right, upward, and downward and always have one empty slot for movements. [3]

Faculty: Dr. Sujata Karve

Title of the Paper: **Feasibility of Low Cooling Technologies in Residential Sector**

Authors: Mankar Dhanashri, Karve Sujata

Name of the Journal/Proceedings: 7th International Conference on Energy Research and Development, ICERD 2019

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Source: *https://heatpumpingtechnologies.org*

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The potential use of waste management models to minimize construction waste: A review

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ABSTRACT

Resource consumption and waste generation has been considered a major problem in the construction industry due tohealth, environmental and economic impacts.The construction industry is responsible for producing different onsite wastes; the amount and type of which depends on factors such as the stage of construction, type of construction work, design change contribution, and practices throughout the project lifecycle. The lack of appropriate management of construction waste is being increasingly associated with its adverse impacts in the proximity of dumping areas. A number of waste management techniques, models and tools are currently available to help constructionoperatives to divert waste away from landfill and reduce environmental burden.The purpose of this study is to understand the potential of waste management models for minimization of construction waste.A thorough literature study identifies varioustechniques, models and tools to minimize construction waste for the future with its opportunities and limitations. Examples of available management tools and models include Cost Benefit Analysis (CBA), Material Flow Analysis (MFA), Multi-Criteria Decision Analysis (MCDA), Decision Support Systems (DSS), 3R modeling, building information modeling (BIM), Life-cycle Analysis (LCA) model based on sustainability measure, Technology Acceptance Model (TAM), Strategic Implementation Model, Industrial management model, lean construction tool, simulation model using the Systems Dynamic methodology. The study shows that implementation of waste management model is a great improvement in construction industry as it promotes the reduction in quantity of waste and efficient use of resources. The study also suggests thatwaste management models should be implemented at initial stages and monitored throughout the life of the project.

Keywords: *Construction waste, impacts, management tools and models*

INTRODUCTION

As per World Bank Report generation of waste will grow by 70 Percent by 2050 in the absence of effective measures are taken in which construction sector share a major part. India, US and China will account for 57% of all global growth in the construction and engineering market in next 10 years underpinning the future economic development of the three countries that account for over a third of the world's population and economic output. In addition,India will overtake Japan to become third largest global construction market. It is also overtaking China and countries such as Qatar that is currently undergoing significant infrastructure development relative to the size of its economy(Mike, 2015).In India, the construction industry has a key role in the economic and social development of the country over the past few decades. Already at 10 per cent of the GDP, it has been growing at an annual rate of 10 per cent over the last 10 years as against the world average of 5.5 per cent per annum (CSE, 2014). India's construction industry is expected to grow at an annual average of 6.6% between 2019 and 2028. The share of urban population is expected to be 50% of the total population by 2050 (GOI, 2019). The urbanization and peripheral growth of urban areas has resulted into the increased residential building construction and area under transportation network and facilities.Almost 70 per cent of the building stock in India is yet to come up and built by 2050. The built-up area is expected to swell almost five times from 21 billion sq ft in 2005 to ap 030(CSE, 2014), this will also contribute to generation of w

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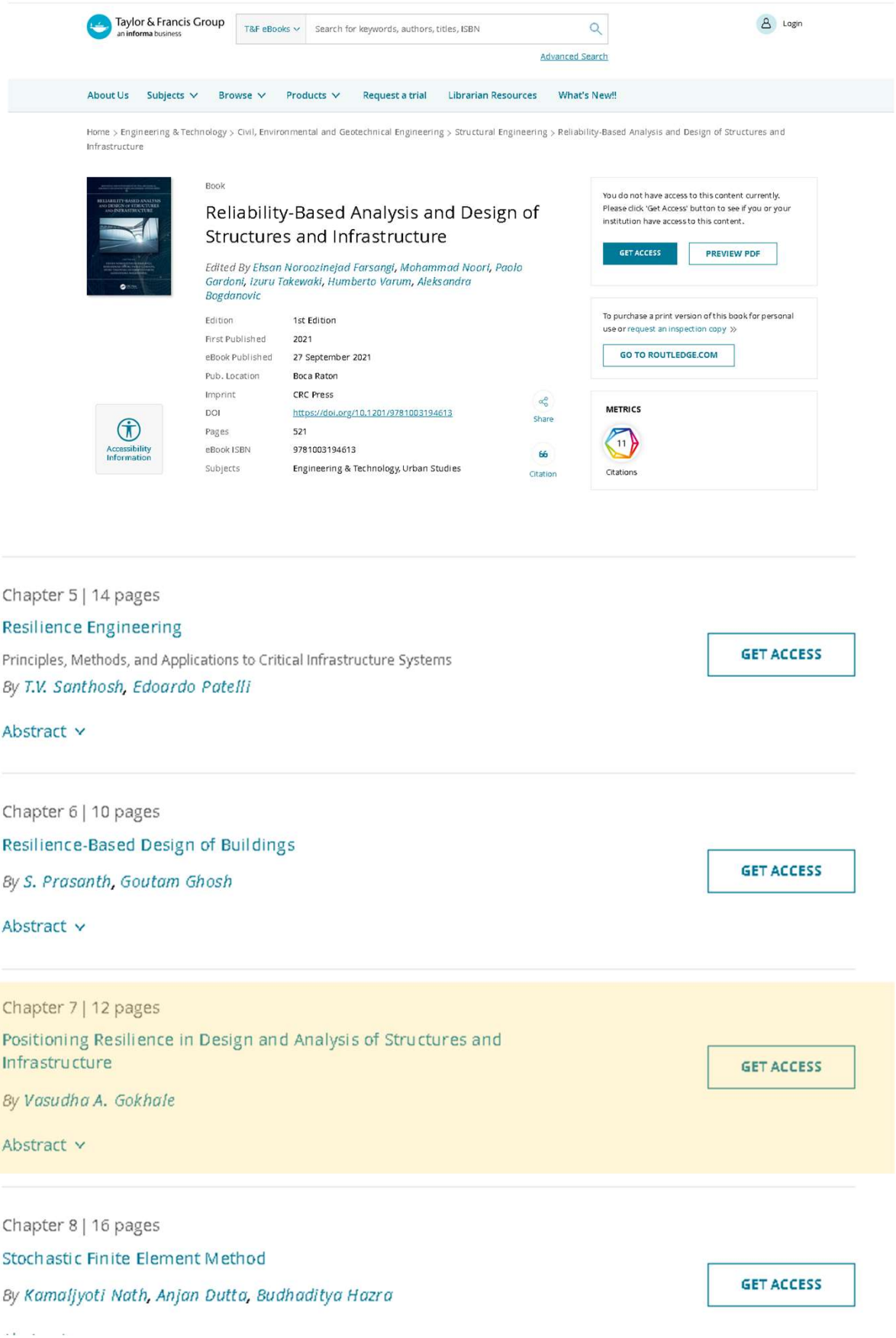

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Amruta Garud & Bakul Rao

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Abstract

Abstract

Land, one of the non-renewable resources, is primarily used as a commodity to cater to food, shelter, and other infrastructure demands. Urbanization has resulted in unmonitored conversions of agricultural lands to non-agricultural (NA) activities in the peri-urban and rural areas, which were once fertile lands. These arable parcels of land have now been exposed to the haphazard urban sprawling. The study aims to map non-agricultural conversions temporally and understand the implications on the local food security and livelihood. A ground-level data extracted from 7/12 forms have been used to estimate the loss of land and the resulting impacts. The Pune Metropolitan Region in India has been considered as a case for investigation. It has recorded a total of 320 NA conversion cases for 140 villages between 2015 to 2019. The results show a cumulative loss of 4739 ha arable land, of which 1146 ha, 716 ha, and 403 ha under cereals, legumes, and vegetables, respectively. It is also observed that 80% of the land lost was under rainfed and 13% under irrigated agriculture. In just four years, it has been estimated that around 22,716, 74,627, and 319,952 people have lost their local source of land for cereals, legumes, and vegetable production, respectively. The potential local livelihood loss is estimated at around 411 agricultural labourers per year. The research concludes that every hectare of land converted to non-agricultural use has direct and much severe implications at the grassroots level, especially on the local or regional food security and agricultural livelihood.

- **Garud, A.,** Rao, B. (2021). Understanding the Implications of the Loss of Peri-Urban Arable Land—A Case of Pune Metropolitan Region. In: Jana, A., Banerji, P. (eds) Urban Science and Engineering. Lecture Notes in Civil Engineering, vol 121. Springer, Singapore. https://doi.org/10.1007/978-981-33-4114-2_35

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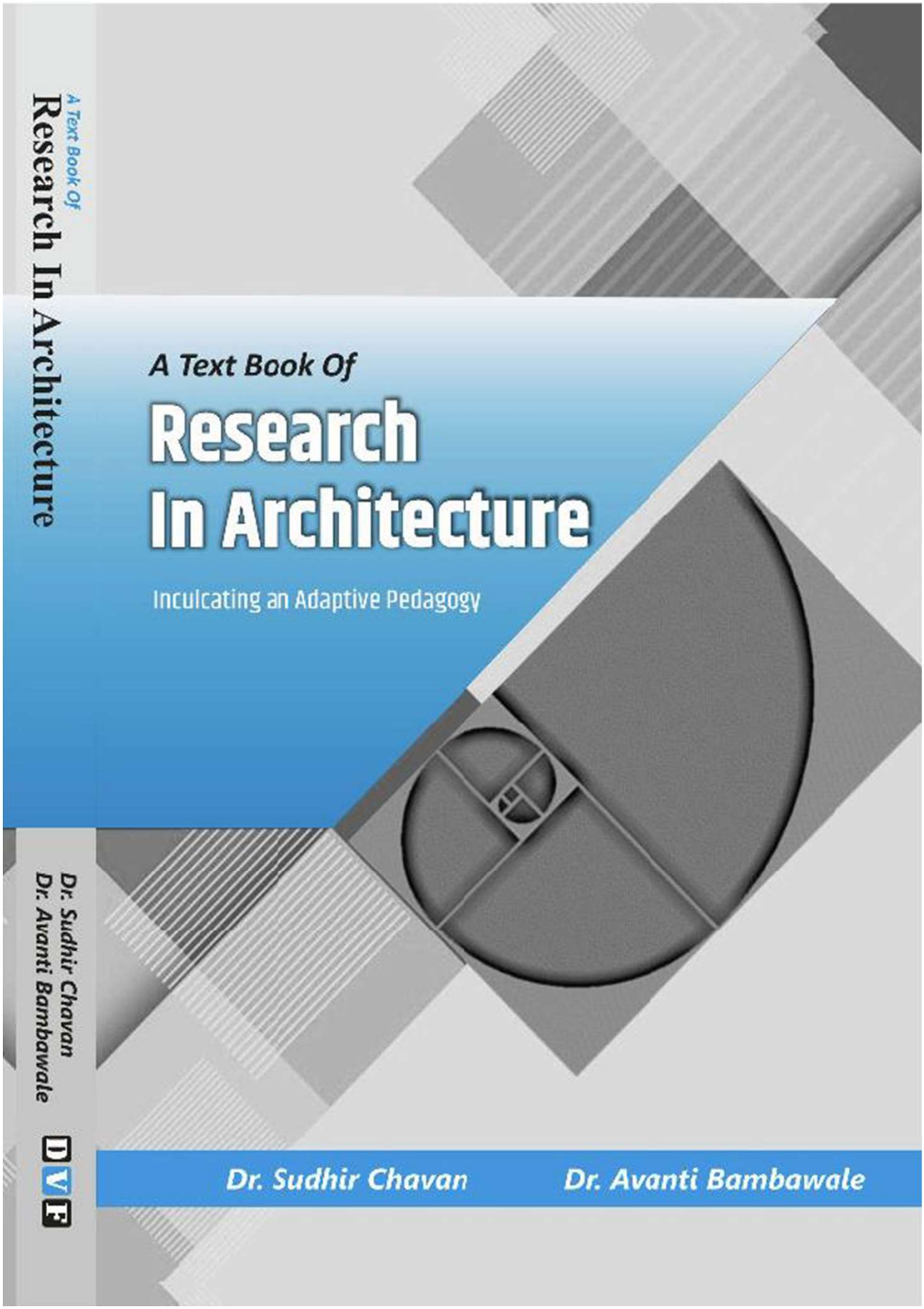

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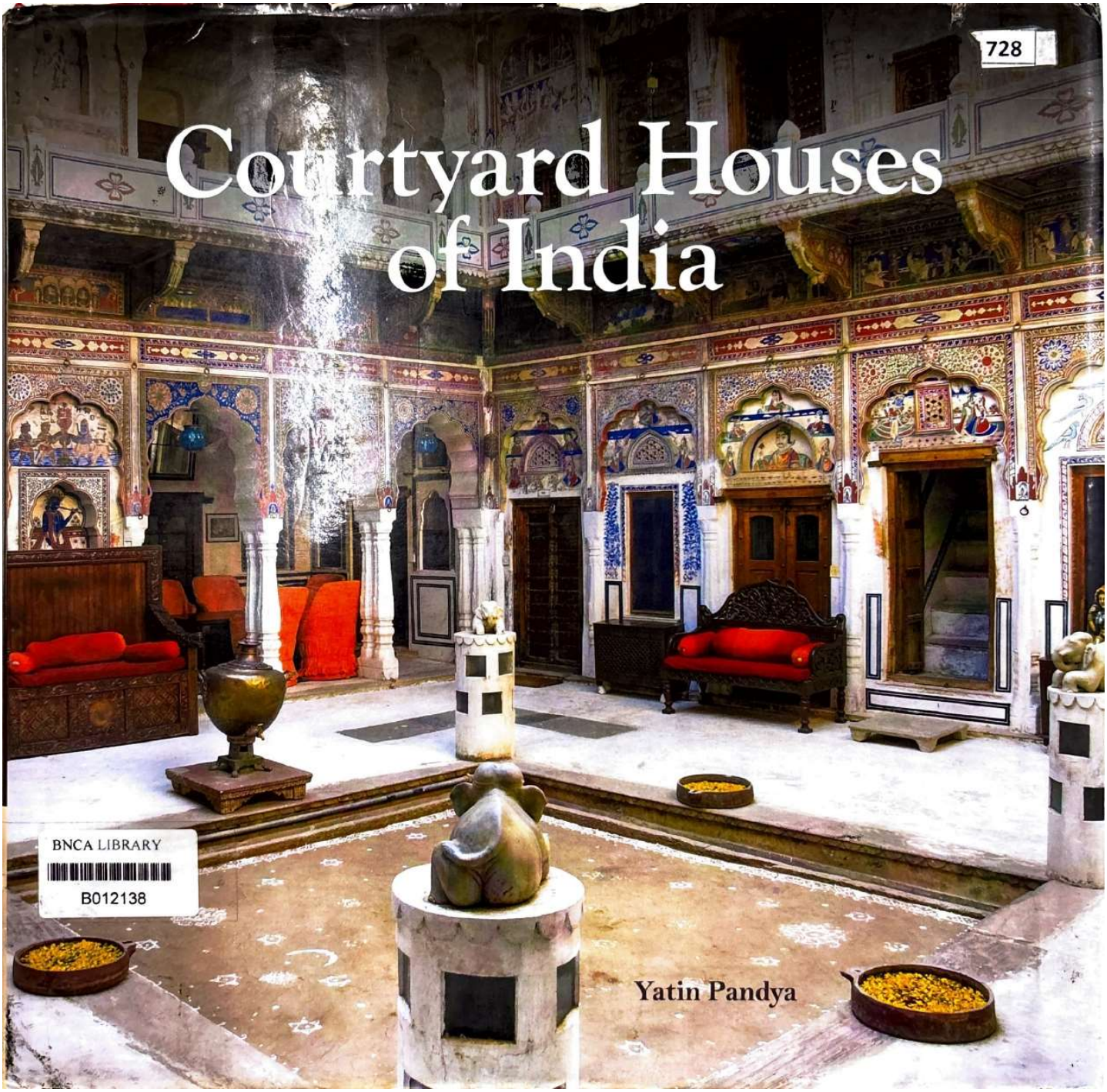

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Captions

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BACK COVER Play of colours and ornamentation rendering identity

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PAGE 5 Dynamic rendition of elementary art in the court

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PAGE 8 Miniature art of Dungarpur palace, Rajasthan, transition through varying spatial narratives

PAGE 13 Intricate wood carving in the courtyard of a *haveli* in north Gujarat

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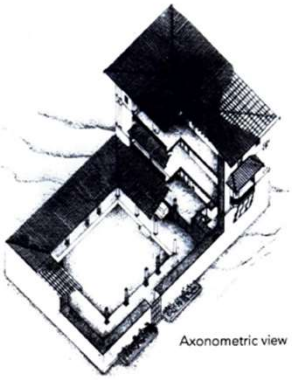
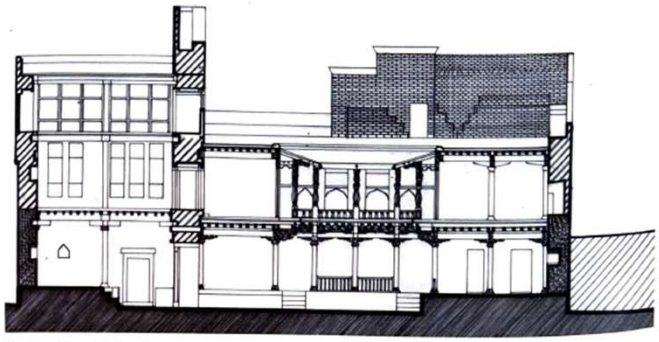
Wadas

The Marathi people are a close-knit and conservative society. Their residences, known as *wadas*, were built to display Marathi culture and prosperity. The term *wada* signifies not only a royal palace but also spacious manors constructed by *sardars* or noblemen, and *sahukars* or businessmen and bankers who contributed substantially to the development of this style of architecture. It was an architectural expression suitable for both the rich and poor, and was intimately bound by socio-cultural, religious and spiritual values.

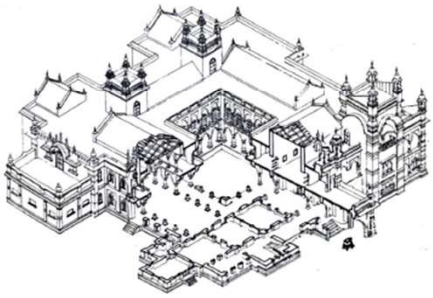
Maratha land was ruled by the Mughals for centuries, and the Peshwas themselves maintained relations with the Rajputs of Malwa. Therefore, *wadas* were influenced by Islamic and Rajput traditions of building and landscape making. The 18th-century *wada* had some similarities with *havelis* of Gujarat in that both were based on similar architectural principles—that of a quadrangle surrounded by built mass, although the *wada* incorporates a greater number of courtyards than the *haveli*. The Maratha craftsmen were not as skilled as those in Gujarat and Rajasthan. Moreover, woodcarving was expensive here. The *havelis* are hence more ornate and decorative in comparison to the *wadas*.



Axonometric view

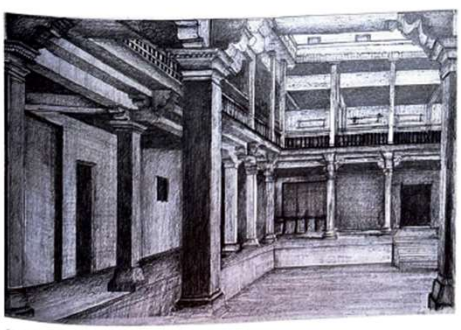


Section of a typical *wada*



Structural layering and transition from closed to semi-covered top open spaces in a *wada*

Also, basic links in terms of concepts can be drawn with the house form in Kerala and the Islamic influences of domestic architecture from Gujarat. The *wadas* of the early and later Maratha period used the same system of quadrangles and timber framework following the principle of beam and bracket construction, which indicated a continuity of tradition. Most of the *wadas* were built in and around Satara, Kolhapur, Pune, Wai and Nashik. Paithan, near Aurangabad, also developed a rich repertoire of well-appointed *wadas* during this period. This was a popular form of constructing residential manors in Maharashtra until about 50 years ago.



Sketch of an outer court of a royal *wada*

Wada—an integral feature of a traditional Marathi neighborhood

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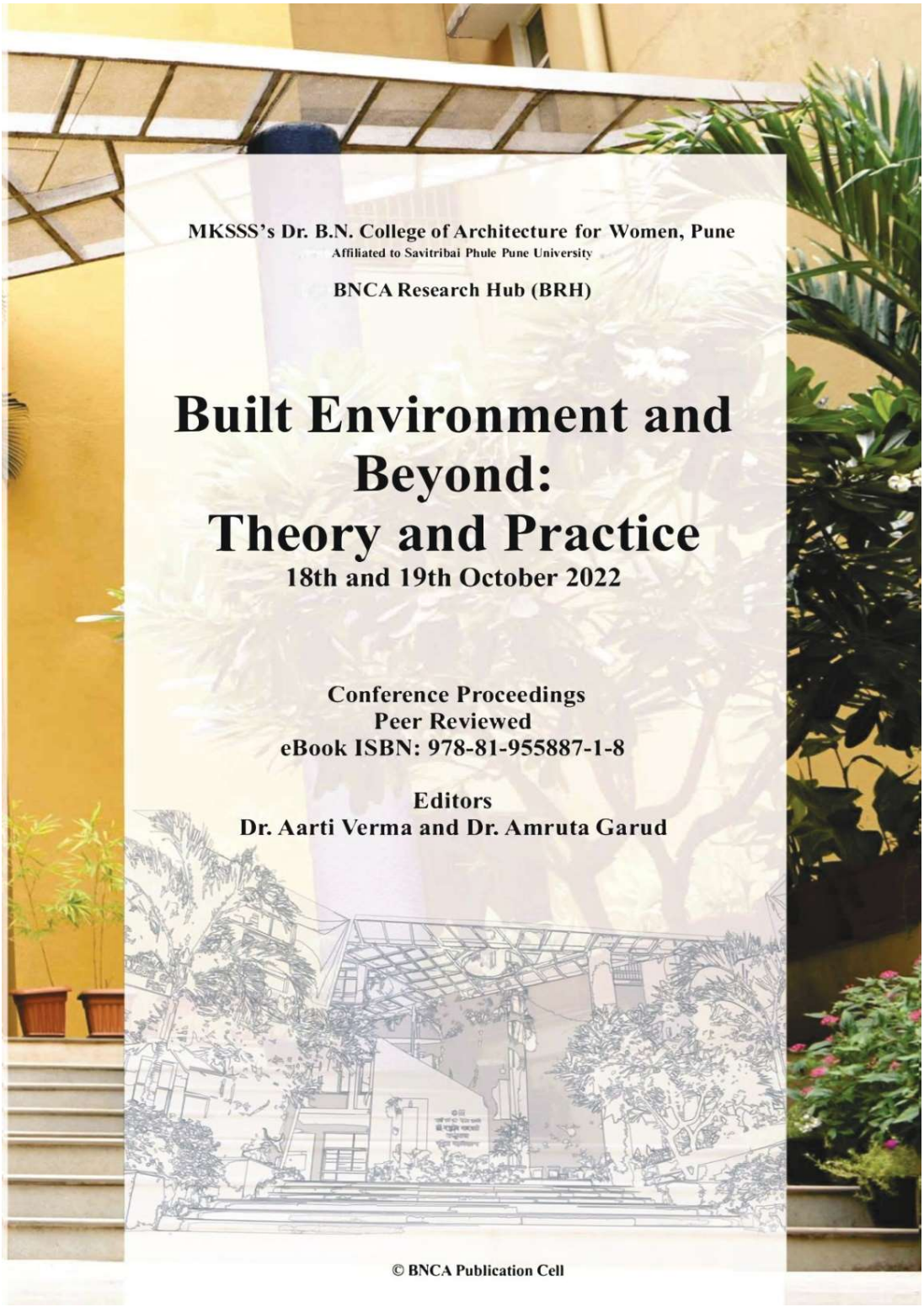

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TRACK 2: DESIGN AND THEORY

Embedding Creative Art in the Landscape Design Studio at Post Graduate Level: A Pedagogical Approach

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Abstract—Landscape architecture is a complex and interdisciplinary profession. Thus, the post graduate students from this field need to be educated about the essential knowledge of all the necessary disciplines for an articulated approach in design. It is also important that the students develop skills such as being able to analyze problems in terms of design and physical form, understanding of the arts, sensitivity towards landscape quality, and a flexible approach to design. This paper tries to study an association between creative arts and design studios. It tries to find out if embedding creative art as a part of elective in Landscape design studio at post graduate level can be a conscious decision to understand how it is perceived, expressed and represented. Identifying the factors of relationship between creative art and Landscape design may contribute to students' sensitivity towards art. It may also lead to the understanding of various art forms and styles and learning the various ways of the application of the same into the design to induce specific emotions, values and create artistic spaces. A time bound studio with fifteen students doing their masters in Landscape Architecture was conducted. A series was run where the works of four renowned Indian modern and contemporary artists were extensively analyzed by considering their background and contextual variations. Studio discussions and assessments happened in an online studio. Students' learning experiences were evaluated through drawings. They were finally analyzed for the integrated approach of converting a space into the place. Results show that, students actually create their own learning based on new knowledge, after getting connected with the series of simulating contexts and styles.

Keywords— landscape architecture; creative art; interdisciplinary; simulating contexts

1 Introduction

Architectural education tests the student's skills in various ways by teaching them design and technique. Architectural curriculum looks at the design studio as a curated subject, in which designing as a process is well planned and structured. On the other hand, the creative art is a cognitive ability depending upon an individual's perception and thinking to come up with innovative, yet practical ideas and products. Thus, to enhance and develop students' special skills for creative thinking and abilities, architectural design education must be deliberated upon. There is a strong need to take measures for improvement and measurement of creative thinking in architectural education by implementing innovative ideas in the education programs (Ayla Ayyýldýz Potur, 2006). The objective of the present research is to find ways of integration of creative art into the landscape architecture design studio through a structured pedagogical approach. There has been a rapid change in the traditional studio-based teaching models. There is a need of developmental and enhanced approach where greater emphasis is given on creative skills for lifelong learning, and the perspectives and ideas of an independent learner. Thus, the development of new inclusive pedagogical engagements is necessary to nurture learner independence within the framework of the design studio (McClean, 2009). Design studio is a principal subject in the Architectural curriculum. Universities and Architecture schools are taking efforts to improve design education by integrating other subjects in the design studios in different possible ways (Gour, 2019). Landscape architecture

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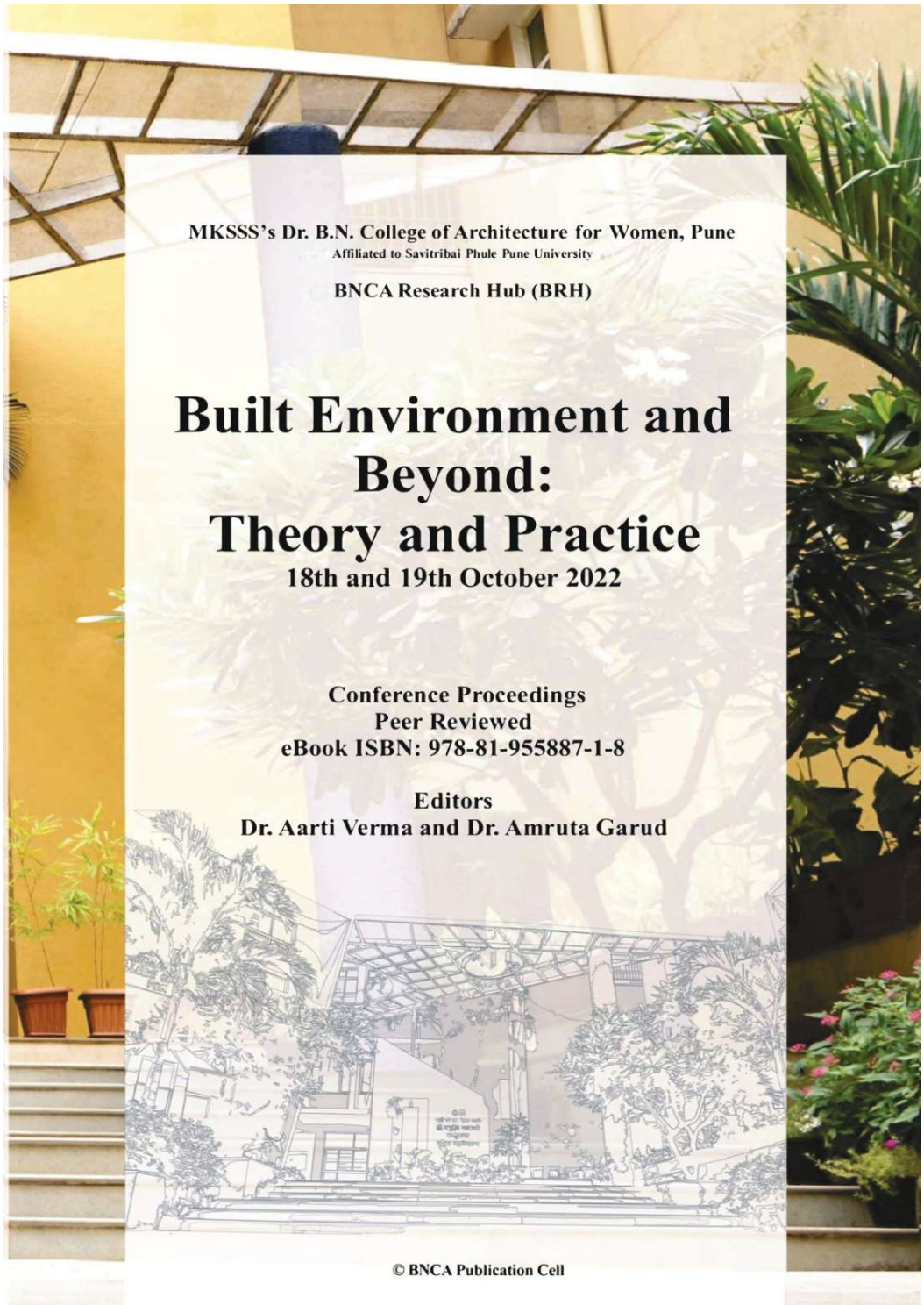

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TRACK 1: ARCHITECTURAL EDUCATION

TRACK 2: DESIGN AND THEORY

Pedagogical approach to study vernacular settlement in Kodagu, India through Experiential learning

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Abstract— Learning through experiencing is an integral part of architecture education. Students visit spaces, measure the buildings, and try to evaluate the intangible qualities like context, sense of scale and proportion, function, etc. and present a report to understand the project through drawings. Experiential learning plays an important role, especially for first year architecture students, in understanding spatial qualities. The paper discusses the process of experiential learning of Dr. B.N. College of Architecture, Pune, first year students who visited village of Kodagu in the state of Karnataka in India. The Ainmanes of Kodagu were selected for this case study as they possess a strong cultural and religious value with a sense of community. The Ainmanes are the traditional ancestral homes of the Kodagu people in Karnataka, India. Students documented the Ainmanes and learnt about vernacular architecture and interviewed the local people to get insight of various functions of the place. A student's survey was conducted post the visit to Kodagu which enquired about students experience of the study process and theoretical knowledge that was conducted pre and post study tour. The enquiry further dwells into comparison of secondary knowledge and primary experience. The research deduced that experiential learning with a preparatory coursework and defined learning outcomes, facilitates knowledge and skill building in terms of understanding structure, construction, materials, comfort study, history, and culture (Salama, 2006). A thorough literature study was used for Process Framework, and the paper proposes a suitable framework which can be adapted for a cultural context based study for the foundation year students.

Keywords— Cultural; pedagogy; architecture; experiential; Ainmane; vernacular settlements

1 Introduction

Cognitive learning in architectural education involves data collected from various sources including books, journals, articles. Advancement in technology, virtual reality and digital technology have made data collection more accessible and provides better clarity ref. Despite these advancements, it is not possible to ignore the effect and experience that direct contact with surroundings brings to the learner. Experiential learning is a learner centred theory where live experiences shape the output and knowledge of an individual. "Experiential [learning] is a philosophy and methodology in which educators purposefully engage with students in direct experience and focused reflection in order to increase knowledge, develop skills, and clarify values" (Kolb, 1984). In Architectural Education, experiential learning plays a crucial role in influencing the students to form an informed opinion by developing knowledge, skills and values, beyond traditional academic classroom teaching.

Experiential Learning encompasses the following aspects:

- Experiential learning helps develop emotional, social, creative, physical, and intellectual engagement, of students within the context of the setting (Sivalingam & Yunus, 2017).
- Accountability on the learner for the experiences and decisions they take.
- Development of attitude towards learning from errors and mistakes

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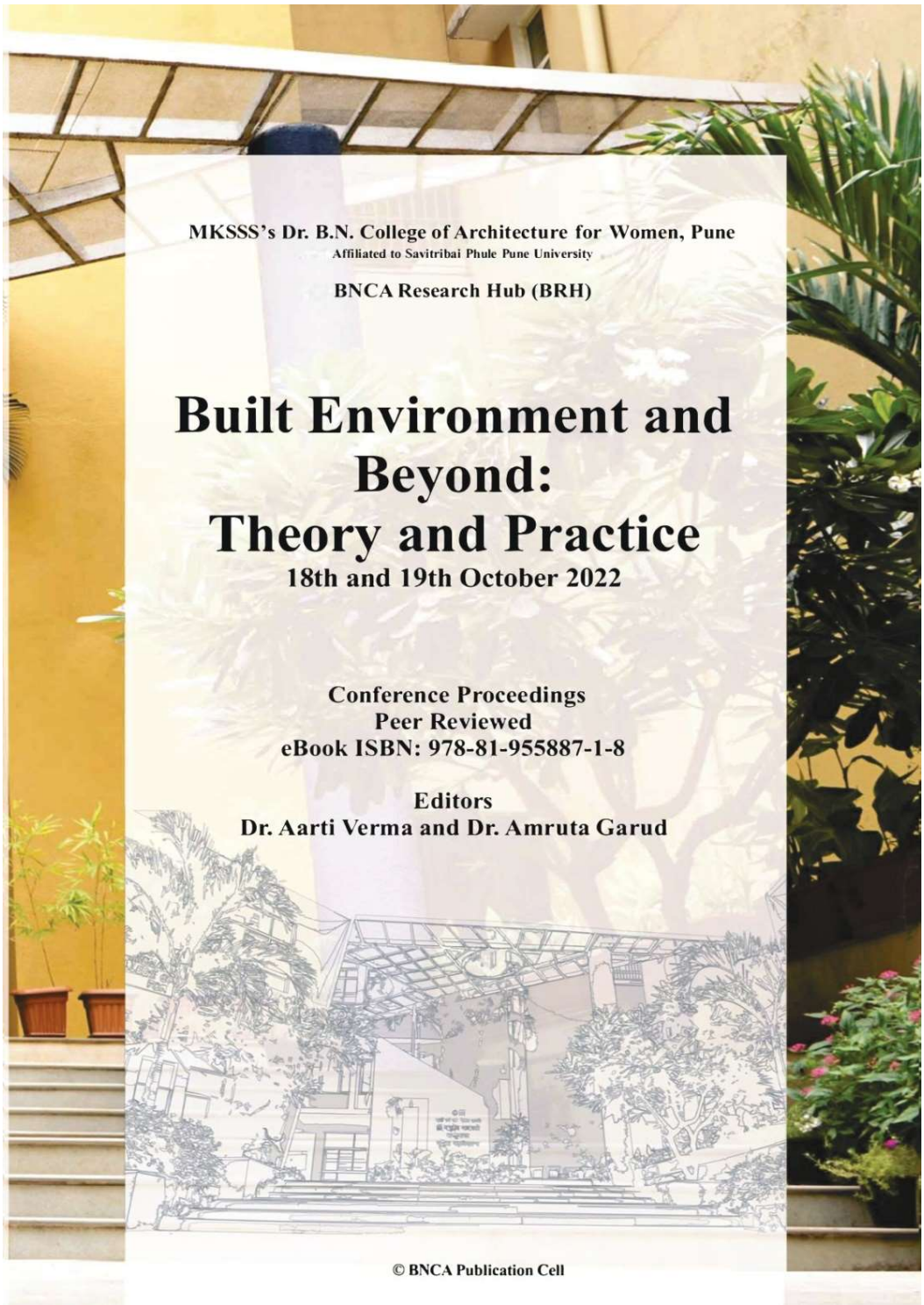

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Abstract— Application of virtual reality technology in academics is under research in many academic institutes globally and the research ranges from pre-school education, school education in science domain, mathematics to engineering, computer science, construction, tourism, and the field of architecture including landscape architecture, architectural acoustics, spatial skills courses, architectural design studios, urban planning, conservation, and preservation of cultural heritage. The current research on virtual technology in the field of architecture focuses on the learning and teaching of construction technology and creative designing. Earlier research reveals that built environment affects the state of mind and hence affects the brain activity. The neuro-feedback technology assists to map the brain activity when people experience built environment using virtual reality. This research paper reviews the literature on both the use of virtual reality and neuro-feedback technology in architectural design studios. It focuses more on the methodological approaches rather than the technical aspects. The research paper presents the use of both of these technologies in the design processes and their advantages. It also attempts to explore the possibility of combining these two technologies in the design processes.

Keywords— Virtual environment, design studio, architectural education, participation and EEG

1 Introduction

The use of technology as a pedagogical tool in the architectural education is not new. Architects are trained to visualize the spaces that they design throughout the course of architecture. They are trained to visualize the spaces through 2D drawings, 3D scaled physical models and 3D models using software. However, each of these mediums has their own limitations. It is challenging for novice designers to relate the 3D scaled physical model to real time 1:1 scale building. Kreutzberg (2014) points out that comprehending and evaluating software-based 3D models becomes tricky due to random zoom factors. Also, the 3D models using software such as ACAD, REVIT, SKETCHUP and 3D max etc. do not offer immersive experience to the students (Sleipness and George, 2017). Immersive Virtual Reality (VR) is considered as effective pedagogical tool by many academicians who have experimented with VR during their studios. These experiments are done in architectural design studios (Abdelhameed, 2013, Klercker, 2000), urban design studios, landscape design and planning studio (Sleipness and George., 2017) and construction studios (Bashabsheh et. al., 2019) as well. Alvarado and Maver (1999) argue that VR can be used effectively in teaching a wide range of architectural subjects including history of architecture, building services and other technical and design courses. Delgado et. al. (2020) mapped the use of Augmented reality (AR) and Virtual reality in professional practice in Architecture, Engineering and Construction (AEC).

The other concern in the architectural studios is the effect of built environment on human mind. The students seldom get chance to interact with the users during the design process to take users' feedback on the built environment that they have designed. Azzy et. al (2021) argue that there is a deficit of objective research on how the built environment and conditions influences human mind and senses. Although the examples of experimental research on use of VR in architectural education in various subjects are numerous, the combination of use of VR and neuro-feedback is

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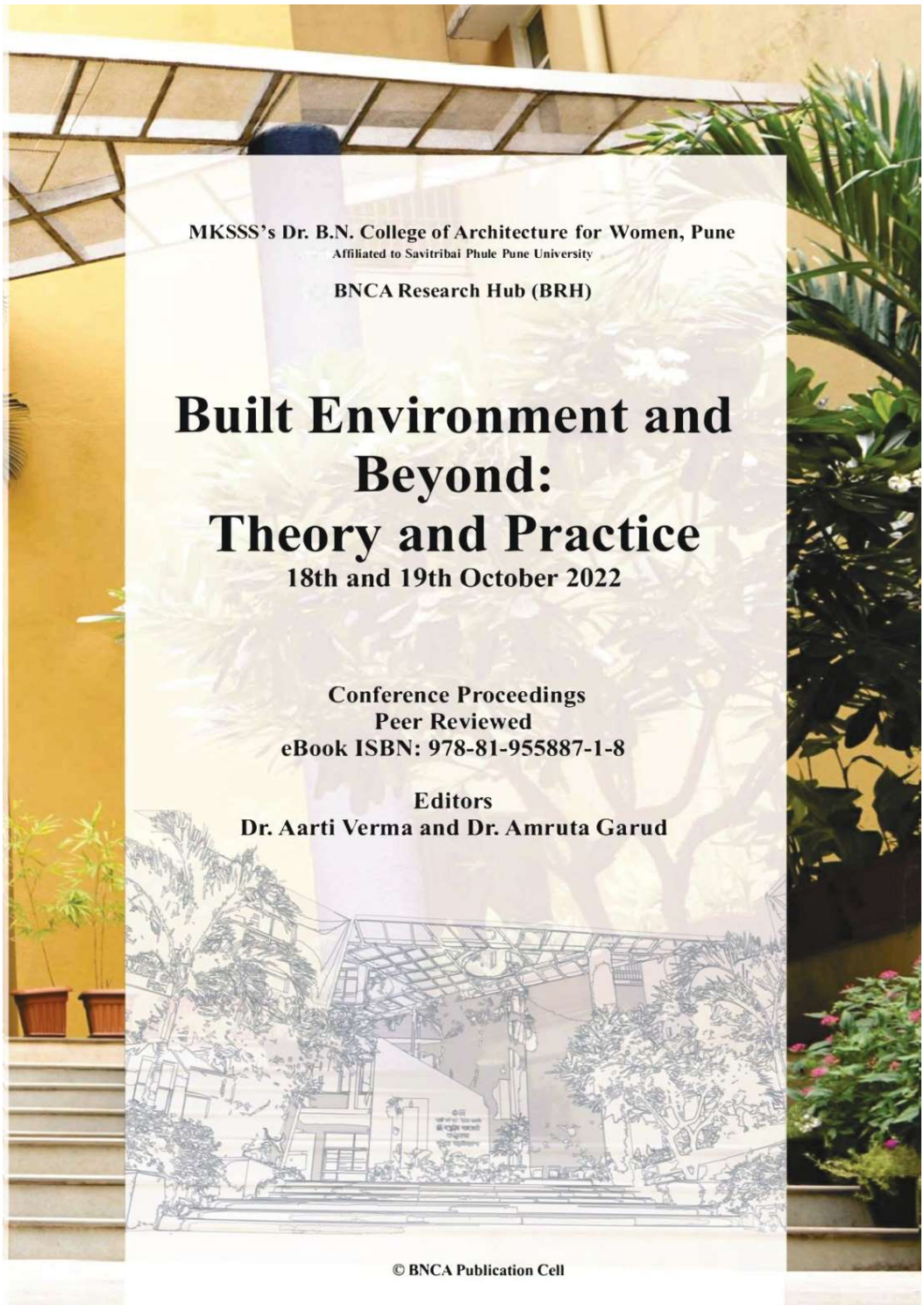

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Abstract— This paper explores inquiry based and reflective pedagogies of teaching and learning to improvise the learning outcome of the subject, "Theory of Structures" in architectural education. The subject Theory of Structures tends to be more theoretical and lecture based, resulting in minimal attention and interest, leading to lack of understanding of the structural concepts among students of architecture. This study was undertaken at Dr. B.N. College of Architecture, based on the curriculum of undergraduate course in architecture at, Savitribai Phule Pune University. Active teaching-learning methodologies were developed by an architect and engineer with academic experience. The methodologies included demonstration with the help of props, game-based learning, experiential learning and were implemented independently and in combination with conventional lectures, for a class size of eighty students. The outcome was measured in the form of an evaluation rubric, comprising of application-based assignments, quizzes and feedback from students. The findings of the study indicate the combination of active and conventional learning methods inculcate better understanding of structural logic among architecture students.

Keywords—Theory of Structures; Pedagogy; Active Learning; Evaluation Rubric; Architectural Education.

1 Introduction

Throughout history, all the buildings were predominantly designed by only one person known as Master Builders. The Master Builder was an Architect as well as an Engineer. After industrialization period, the demand for the buildings increased. New materials, instruments and techniques in construction started emerging. Thus, it became difficult for one person to detail every factor in designing and construction of the buildings. The work was divided between different professions- Architects, Engineers and Builders. The problem that aroused with the distribution of work amongst the professions was lack of communication in between them, regarding the building project management and other service collaborations. In the last few decades, this issue was spotlighted, at universities level and out on-site level. To cater this issue and for future prospects of architecture, to be technically sound, Architects and Engineers should work together at institution level and out on site as well. Education plays an important role in training or inculcating good practices in students. Thus, to start with at the institution level, Theory of Structures has been added as one of the subjects in architecture education at undergraduate level.

1.1 Current Architecture Education under Pune University

In Pune, all the architecture schools affiliated to Savitribai Phule Pune University (SPPU), comply with a specific syllabus that offers Bachelor's Degree Program in Architecture as a full-time professional course of five years. While blending theoretical and practical knowledge together, a gradual development in student's architectural skills, is seen over the five years of the curriculum. The curriculum includes the subjects like Architectural Design, Building Technology and Materials, Architectural Design and Graphics etc. These subjects are allotted with credit points, out of which

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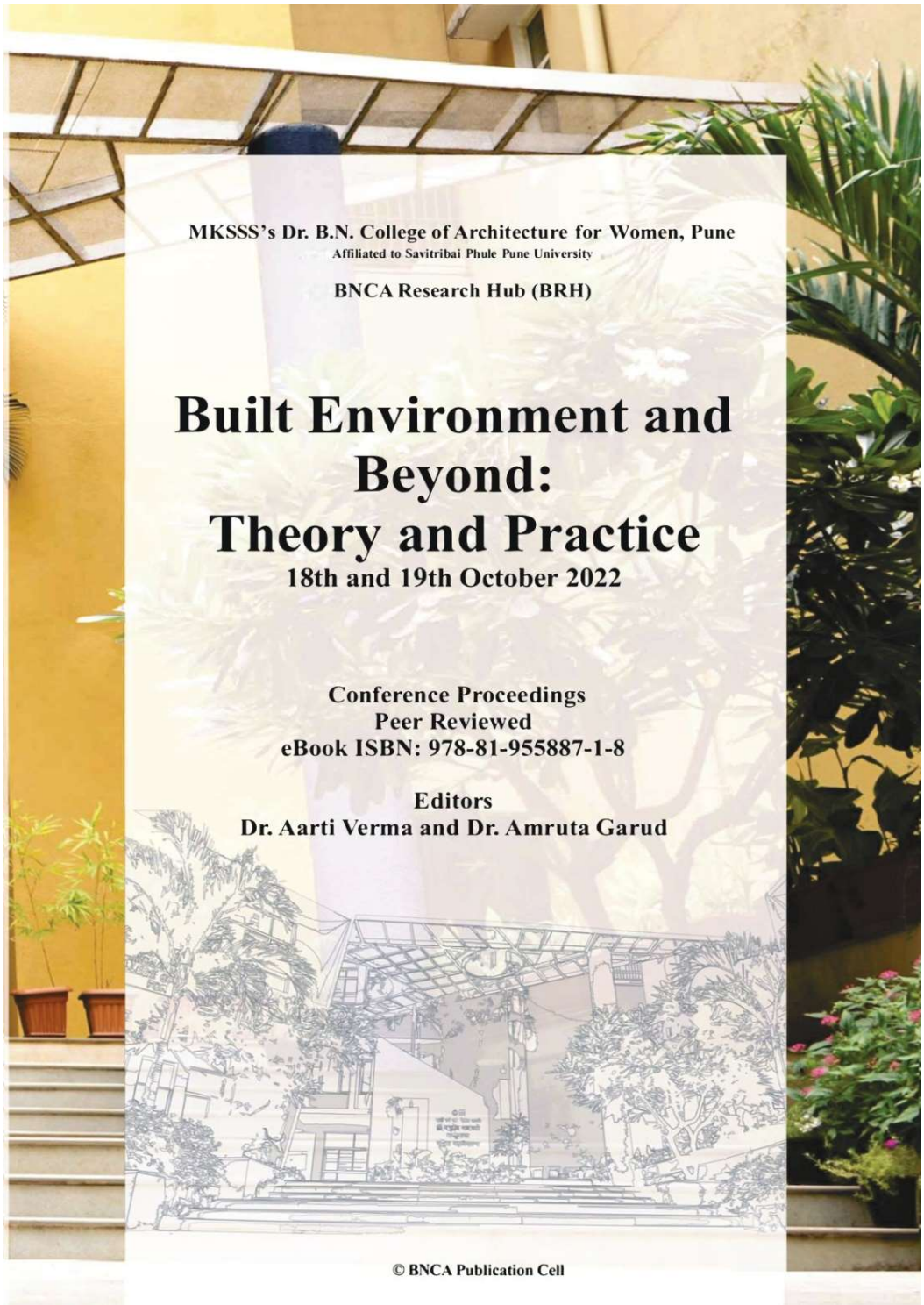

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Abstract— Material selection is rigorous process that has to be well considered and justifiable by architects. For this an architect needs to have information on whole spectrum of aspects considered during design and selection process. Literature states that material properties, experience, manufacturing process and context are main elements that are related to material selection process. The main purpose of architecture education in the science of material, not merely to teach facts but to make the students aware that understanding the building materials in a fundamental way with its manufacturing process, ingredients and its proportion along with its properties is important inquiry to be done. This helps them to develop an analytical attitude of mind towards the selection and use of materials based on its understanding. Inquiry-based learning (IBL) is a pedagogy which best enables students to experience the processes of knowledge creation and the key attributes are learning stimulated by inquiry, a student-centred approach, a move to self-directed learning, and an active approach to learning. Experiential learning method is evaluated through this study by adopting "Inquiry Based Learning" for the subject of building material in Architecture. The research objective is to analyze students' responses and approach towards inquiry based learning after participating in a pre-designed exercise. This research was conducted using a case study research employing qualitative data analysis. The data were collected using a purposive sampling technique with 45 students out of 54 students from fifth year architecture participated in this structured interview. The data were analyzed using descriptive qualitative analysis. Students have shown positive response for experiential activities conducted to understand the ingredients and manufacturing processes of building materials. The students could relate the course material to real-life situations, which may benefit the students to enhance learning and connect the knowledge they learned to their own experiences. It is suggested that the experiential design is effectively used and could explore the relationship between learning theory and practice in Architectural profession.

Keywords—Experiential; Kolb's learning style; Building material; Architecture education.

1 Introduction

Material Selection in Architectural Practice is a rigorous process which depends on four aspects, i.e. Physical attributes (Size, Shape, Weight), User Experiences (Aesthetics), Manufacturing Process (Ingredients and waste generation) and Function/ Use. Character of any building is highly defined and enhanced by the material pallet. The increasing diversity of the material availability in market creates the need of a study of material properties and management to use them effectively in the profession. In case of Architectural profession, understanding of Materials and Construction is one of the cores to be dealt with. It is important to cultivate deeper understanding of building materials and its management during early years of the architectural education so that fresher professionals are habituated in using the knowledge and are more sensitive towards their role (Lisa Wastiels et al., 2012). Learning from Material Management prepares future architects to work in more collaborative ways in multi-disciplinary environment and trains them to be a responsible decision maker regarding material choices to efficiently address the aspects of sustainability, aesthetics and cost. The main purpose of Material Management topic in architecture education is, to make the students aware that

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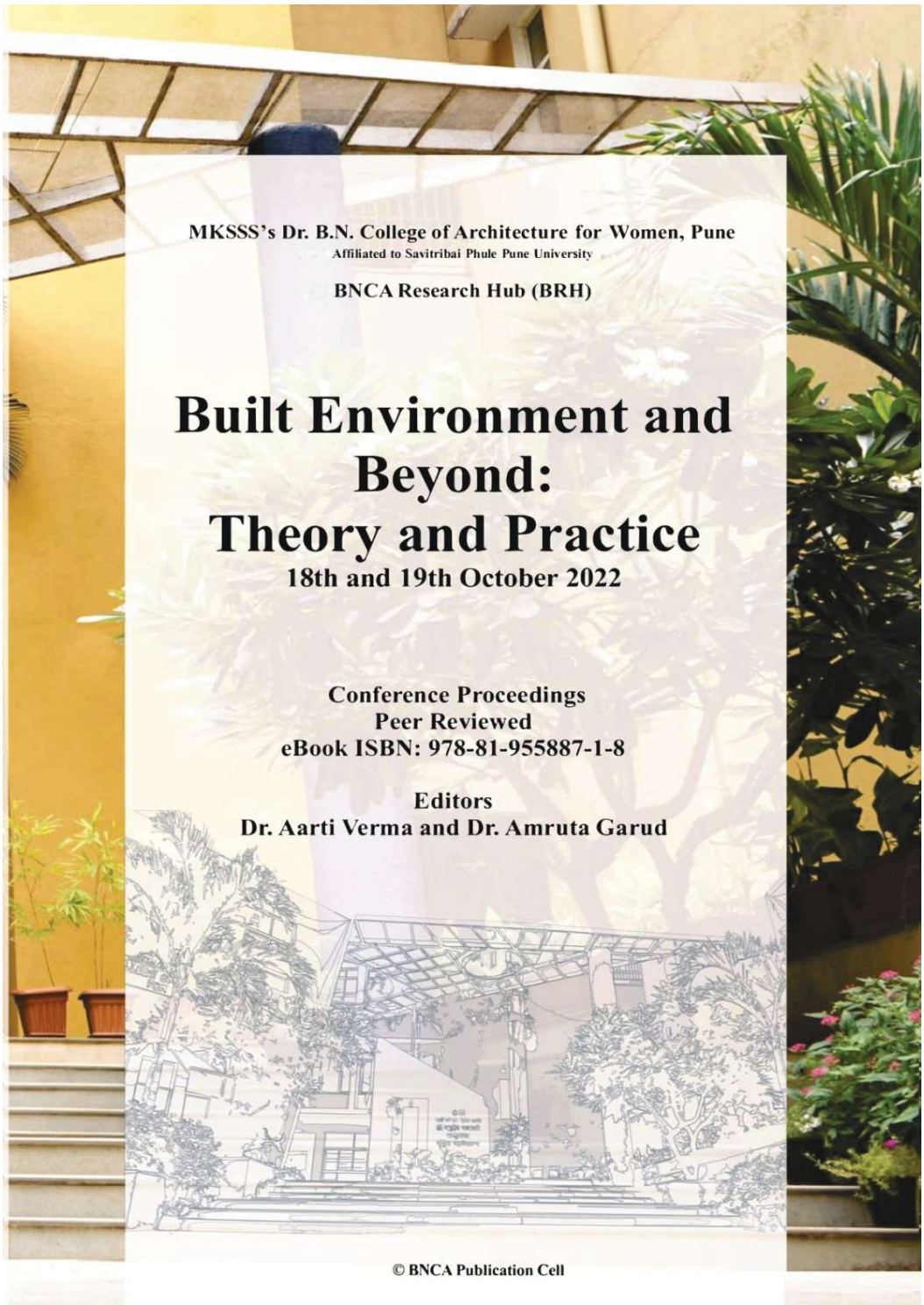

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Abstract— Every country possesses their own ideals manifested in their culture. Architecture and music come from particular country, region, and area which play a key role as a product of the culture where it belongs to. Gaquin identified thirteen categories of art forms which include architecture and music which exist in every community, every culture and play an integral part in social life. Architecture is characterized by three essential qualities as suggested by Vitruvius viz. 'firmitas, utilitas, venustas' which can be referred as 'firmness, use and beauty'. The venustas, or beauty, is concerned with the artistic aspect of architecture and from the onset of the history of architectural theory; architecture has been regarded as a type of art. Architecture is referred as frozen music where its interrelation with music is multiple (Johann Wolfgang von Goethe). Iannis Xenakis, composer and architect explained the great linkage and shared terms between music and architecture .India is the country with a diverse mixture of tradition and culture. Temples, churches and mosques as well as forts a part of Indian Classical architecture and different art forms like sculpture, painting , literature (style) and music and dance form constitute this tradition and culture. Indian classical music referred as "Shastriya Sangeet" the Sanskrit word for music is Sangeeta which represents song (geeta) instrument (vadya) and dance (nritya) characterized by a rich stylized structure containing many musical forms. Raga is the main musical form which is pleasing to listen because of its adornment and beautification by notes (swara) and order of movement (varna).This research analyzes the parallels between Indian Classical Music and Architecture. The common parameters between music and architecture are discussed based on the questionnaires for students of music and architecture. The analysis revealed the common attributes between the two art forms.

Keywords— Music, Architecture, Parallels, Attributes, Art

1 Introduction

The trace of interrelation between music and architecture is vividly visible in literary sources from ancient times. In the works and philosophy of Roman Imperial architect, Vitruvius the association between music and architecture is clearly seen or understood. In *„De Architecture'* he has written on architecture and mechanics there is seen a lot of impact of theories used in music. He says that the ratios and proportions found in nature should be applied in the design of musical instruments as well as structures. Here he has explained an analogy. The volumetric proportions of temples and theatres were such that visual and auditory effect is elevated and augmented. In the same way a composer designs the temporal space to create a melody. His description and analysis of temple and theater design was consistently based on applies music theory. The distance between the columns in the temples can be based on the intervals between the tones in the music has also been illustrated.

Indian Classical Music is basically a structured system still musicians have great scope to explore a raga in their own way given the importance of improvisation which is a fundamental part of it. Performers are able to design the raga and its performance as per their Intellectual skill, emotional capabilities as well as their mental conditioning. The inherent faculties of the musician are developed according to the traditions of Gharana Every performance characterized by a different amalgam of above mentioned factors which results in diverse and rich improvisational patterns (Narayan, 2018).The basic components of Indian Classical Music is Raga and Tala which are melodic products representing the creativity of artist. Every Raga in Indian classical music has different features which make it distinctive and therefore it plays a significant role. The Raga has defined qualities like definite nature and scale of notes, defined order of tonal syntax, emphasis

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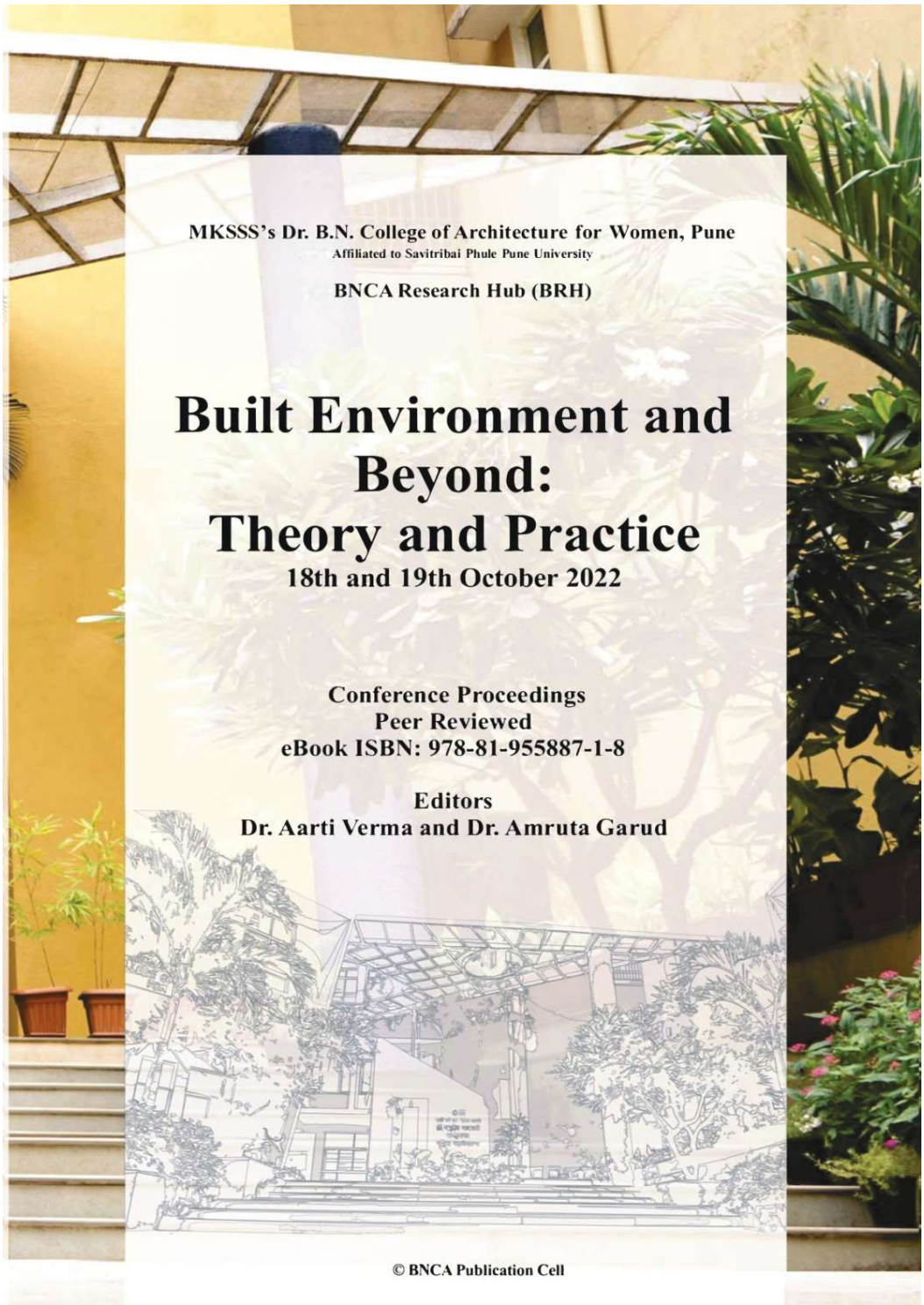

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Adaptation Potential of our residences post COVID-19 lockdown

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Abstract— COVID-19 has underlined devastating effects of a sudden pandemic around the world and the outbreak led to an immense change in the way we lived. This led to lockdowns being imposed across the world. Our residences have turned into an office, school, gym, and playground suddenly. Due to this shift from outdoors to indoors, the housing sector faced a lot of challenges. The COVID-19 pandemic has made us rethink how we live and construct in the future. From the concept of flexible layouts, creating indoor private open-spaces, use of smart home technology to ease the lockdown effect, etc., were some of the new concepts that emerged as a response to it. People are relying on their residences today more than ever and they needed to take on greater responsibilities to facilitate additional activities and services. Many people believe that this current reliance on one's own home will endure long after the pandemic has ended, which emphasizes how homes should meet the demands of this new, unforeseen era and will require to modify as they take on greater duties in our daily lives. The paper aims to study the changes individuals have made to their residences in the presence of lockdown. The objectives are, to understand the various functions of residences, changes in lifestyle and tangible changes made in residences during the lockdown. The study uses participant observations (photographic, personal experiences, etc.), literature review, interviews to understand how people adapted to living in their homes. The data collected will be analyzed and concluded that people made changes to their residences in various ways possible to suit their preferences as a response to the sudden lockdown imposed on them and how future residences must be pandemic ready.

Keywords— Residences, Lockdown, Pandemic- COVID-19, Social distancing & Self-isolation, Tangible changes.

1 Introduction

COVID-19, a coronavirus disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) (WHO, 2020), was first reported in January 2020, and its rapid spread into a global pandemic has been documented in the global media. COVID-19 has no precedent in terms of its quick spread, global reach, intensity, and cross-sectoral influence. Even the most recent pandemic, the influenza ('Spanish flu') epidemic of 1918–1920, while global and devastating, cannot be used as a model because the world was not as interconnected at the time, and the economy was not as globalized as it is now. The terms endemic, outbreak, epidemic and pandemic relate to the occurrence of a health condition compared to its predicted rate as well as to its spread in geographic areas (Grennan, 2019). An endemic condition occurs at a predictable rate among a population. An outbreak corresponds to an unpredicted increase in the number of people presenting a health condition or in the occurrence of cases in a new area. An epidemic is an outbreak that spreads to larger geographic areas. A pandemic is an epidemic that spreads globally.

A sudden halt in the worldwide trade and economic sectors occurred during COVID-19. Drops in cargo shipments hampered both domestic and foreign supply chains in industry, healthcare, food production, and distribution. Due to cancellations or limits on international and domestic travel by air, sea, and land, it delivered a serious blow to the travel and tourism industry. Due to the sudden suspension of travel due to the lockdown, it temporarily displaced expatriate workers and/or their families both domestically and overseas. As a result, global economies were impacted. Additionally, there have been some significant environmental changes, such as a decline in noise, water, and air pollution, particularly in cities (Spennemann, 2021).

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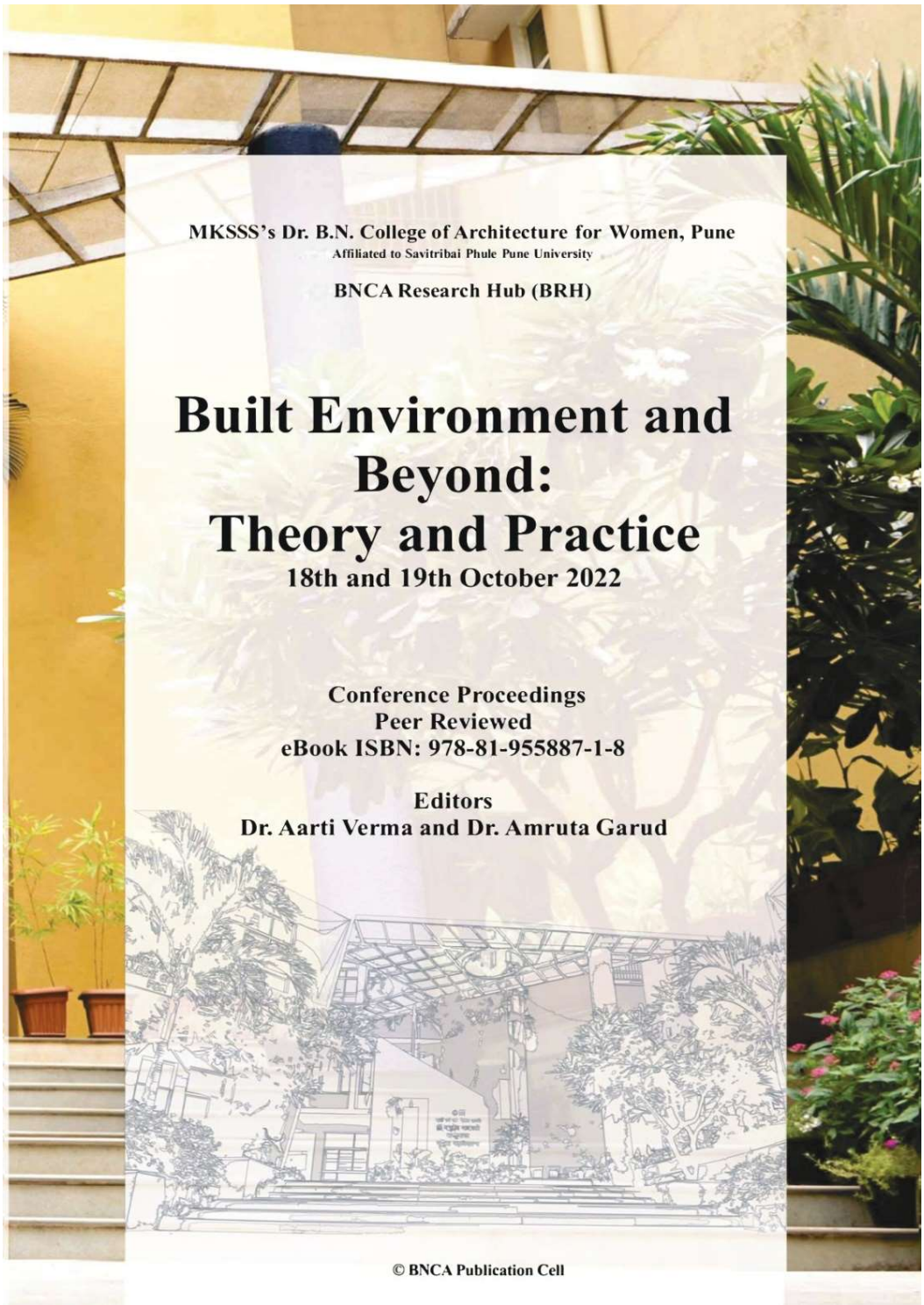

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TRACK 2: DESIGN AND THEORY

Space Design for Better Learning Environments

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Abstract—Architecture is the closest amalgamation of art and technology that humans can experience physically. The design of spaces takes into consideration a wide array of parameters ranging from natural light, ventilation, material palette, colour schemes to thermal comfort. These parameters help curate the experience of the end user in the space. Architecture hence, affects all five senses and it is very important that design addresses each of these. Architectural Psychology is a field of study that is gaining wide popularity as people acknowledge the need for spaces that positively affect mental health. The aim of this research is to highlight the importance of the intangible aspects of architecture in spaces occupied by developing children; mainly schools. This study looks at how these aspects have been dealt with in various building typologies in the past, and elaborates on the selected typology. Relevant literature highlighting the fact that students are the age group well sensitive to the experience of the space they inhabit has been studied. A survey among a group of people investigates how people associate with their school memories and school architecture. The study concludes that architecture can impart necessary intangible qualities to a structure that helps its users navigate their own world differently.

Keywords— Architectural psychology; school architecture; intangible; emotions; child-centric-design.

1 Introduction

Architecture today is intent on advancing technologically. We are losing focus on the human, immeasurable elements of design. Contemporary architecture often exhibits a different type of structural organization that is not rooted in nature's blueprints. (Coburn & Kardan, 2019) The architectural design process needs to be more sensitive to the needs of the users occupying the structure and their mental wellbeing. We need to use nature as a building material and a vital part of our buildings. We must design with the intangible things like light and darkness to achieve the required moods and reduce the stress of the users to try and adapt to the spaces. We need to find the poetry in the design process. We need to keep the comfort of the end-user at the highest priority. As children, it is easier to immerse ourselves in an experience, because while growing up, a lot is unknown to us. Relationship between children and the built world is dynamic and exciting. We can all recall a time in our childhood, when architectural spaces affected us so strongly that all other thoughts in the mind disappeared completely. Growing up in and around good architecture will play a role in the overall development of these children as social beings with a sense of community.

Today's schools that are built to focus on rote-learning and closed-classroom atmospheres do not give much importance to the need for children to interact with nature and with other children. The classrooms are designed as exclusively private spaces shut out from the outside world and make basic things like human interaction or socialising no longer desirable. This is where the Indian gurukul system of education takes the upper hand. The gurukul system encouraged children to learn through experiences, and not through spoon-fed data. These children grow up handling the smallest of problems by themselves and learn to coexist. This kind of learning needs to be supported by befitting architecture to carry out this learning in. Schools should be able to provide an architectural environment with spaces designed to foster the growth of its students as socially effective individuals, meanwhile breaking all barriers that prevent them from acknowledging each other as fellow human beings. A building designed with intentionality will do what it's intended to do. A building designed to deliver togetherness will deliver. 'Every space does something. We need to make sure it's the right thing.'

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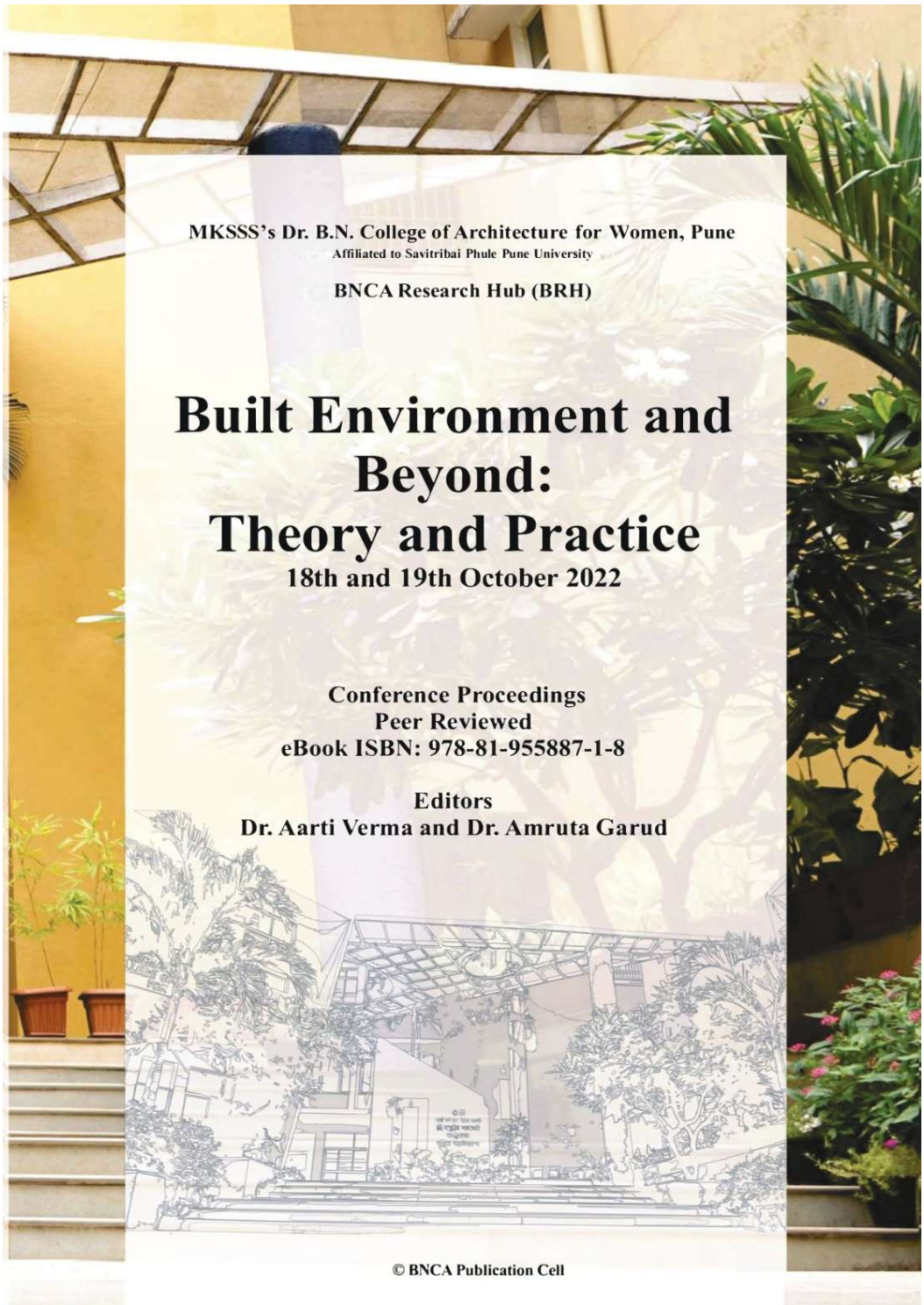

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TRACK 3: ARCHITECTURAL PRACTICE

Citizen's preference regarding the development of the Mutha riverfront lead towards Social Interaction

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Abstract—Pune is one of the fastest-growing cities. Rapid urbanization has led people to be distinct and neglect the river Mutha. Rivers have always played a vital role in human civilization. To be socially conscious it is important to interact. Social interaction is key to development. Social interaction helps in mental health and wellbeing. It generates avenues to be aware of the surroundings and perceive solutions for creating a better environment. This study aims to find social interaction possibilities on the Mutha riverfront by understanding the preferences of the citizens residing in the surrounding areas. Taking into account what the citizens want and how their preferences can be beneficial for both the citizens and the river. The study uses a questionnaire to understand what kinds of facilities citizens currently prefer to access. These preferences are then compared with the opinion to access the facilities if developed around the Mutha riverfront and understand if there is an increment in usability. The facilities selected create social interaction. The study concludes that citizen's preference is essential to develop the Mutha riverfront, and the development will help in increasing social interaction.

Keywords— Citizen's preference; Mutha riverfront; Social Interaction; Urban River; Development; Pune.

1 Introduction

Human settlements have played a vital role in human civilization. Settlements were always formed near availability of natural resources. Rivers have always played an integral part in human settlements. River valleys are the most fertile regions, with the available freshwater for drinking, agriculture, and irrigation facilities. These rivers have also played a prime role in increasing social interaction and shaping cities. Rivers have not just been a natural resource but have also acted as open spaces facilitating interaction and leisure spaces. (Siân de Bell, 2017) The present study is formulated on this premise of understanding river fronts as a significant open space in a city's context. The site is positioned in Pune, a metropolis within side the western part of Maharashtra state, India. The Mutha riverfront is enveloped by residential, commercial, institutional, and a few heritage structures, which ends up increasing the usage of the riverfront. The rapid urbanization has led to the detachment of the citizens from the river. It, therefore, becomes essential for the citizens to take advantage of the riverfront and bring the Mutha back to its glory. Studies have also suggested that people's participation in a city's development is gaining importance (Lumosi, 2020)
Hence this research is about understanding citizens' preferences for the Mutha riverfront development and how it can host social interaction. Further, understanding how citizens preferred activities/facilities can increase social interaction.

1.1 About Mutha Riverfront

Pune is one of the fast-enlarging cities. The expansion is because of migration from all over the country. On the western margin of the Deccan plateau, on the leeward facet of the Sahyadri mountain range, Pune is situated. The metropolis is blessed with two essential rivers Mula and Mutha that originate in the Sahyadri range and traverse throughout Pune, with an approximate length of 44km and widths varying from 80mts to 250mts. Out of which 22.2kms is Mula, 10.4 km is Mutha River

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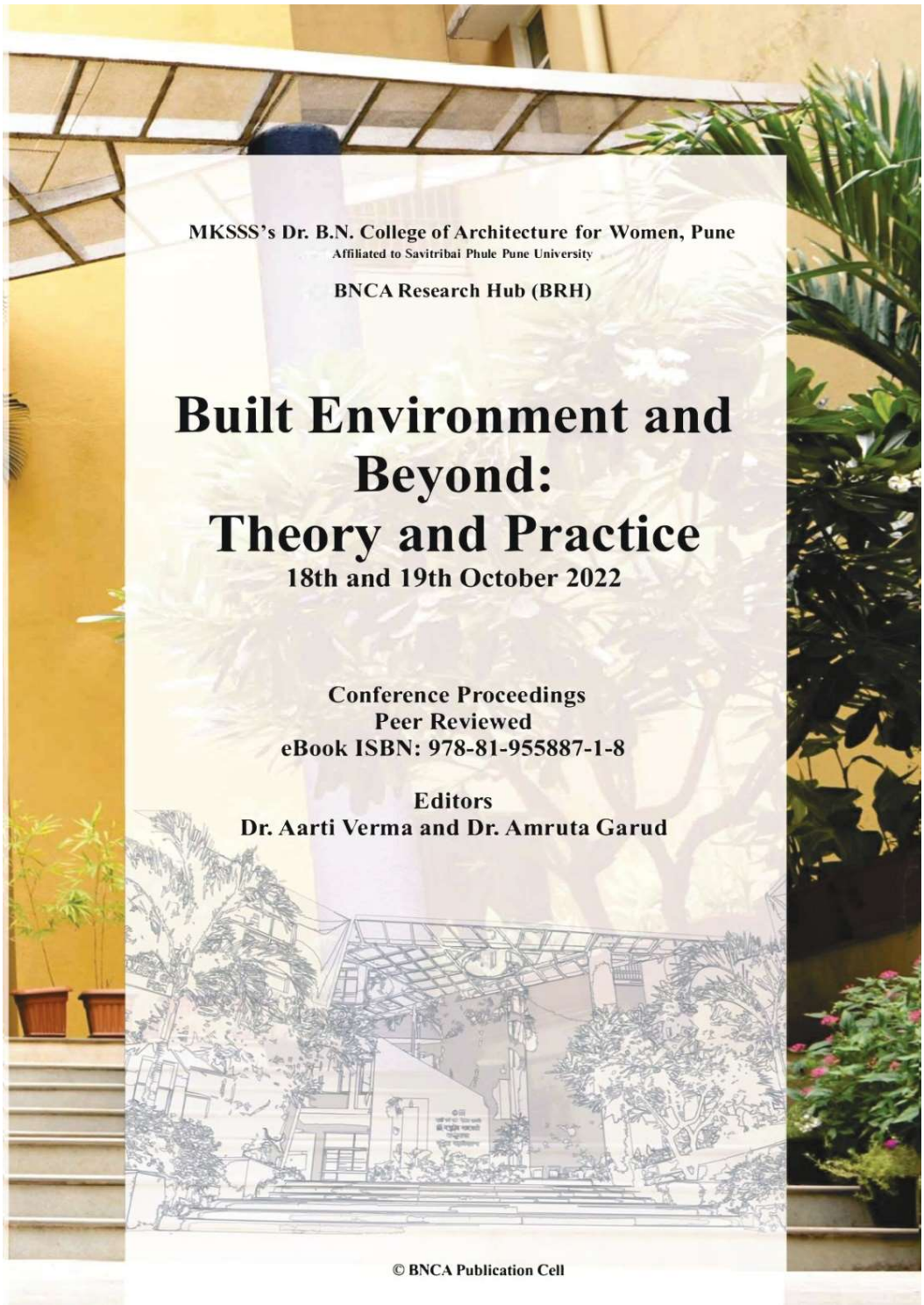

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TRACK 3: ARCHITECTURAL PRACTICE

Street Lighting and Perceived Personal Safety in Urban Mixed-Use Environments

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Abstract—Lighting in public space is an unavoidable facility in night time. The life experience at night can be enhanced by well-lit areas since they increase the environment's aesthetic appeal and sense of security. Very little is known from previous studies for association of lighting in public areas with perceived factor of safety in the real-world urban settings. This research attempts to know; How do people perceive night time street lighting with their personal safety in a mixed-use urban environment. For the study that examines how street illumination affects how people perceive their personal safety, a cognitive behavioural mapping method is used. An offline questionnaire and a structured interview were adopted research methods. A total of 43 participants (33 were asked to fill an offline questionnaire and 10 participated in a structured interview) were involved in this study who were at transit and were regular users of the identified mixed-use street. The findings showed that pedestrians see street lighting as a crucial aspect of urban planning when evaluating their perception of safety and walkability at night. A qualitative analysis revealed five factors for perceived safety after dark: gender, built environment, greenery, lighting conditions and presence of others.

Keywords— Street Lighting, Perceived Personal Safety, Urban Environments, Pedestrians, Gender, Built Environment, Lighting Conditions.

1 Introduction

Urban planning and street lighting go hand in hand in today's environments. Numerous significant advantages are offered by street lighting. By artificially extending the hours that it is illuminated so that activity can occur, it can be utilized to improve security in urban areas and the quality of life. Additionally, it improves drivers', riders and primarily pedestrians' safety. Brighter street lights do make individuals feel safer when strolling at night, yet they may or may not have an impact on crime. This may lead to a significant increase in the daily walking time of individuals. Moreover, it can lessen social isolation, decrease the number of people who stay indoors at night, raise communal pride, and promote physical and mental health. When used effectively, street lights may enhance people's lives and contribute to the nighttime vitality of neighbourhoods. However, there is still much to learn about how people react to street lighting and the effects it has on society and the environment, particularly how it affects perceived personal safety. Experiments like this one can assist to pave the way. The urban environment is perceived differently during night time. The same areas that are inviting during the daytime are not the same after it gets dark. Most walkers don't feel safe at night and depend on external lights to provide them a sense of personal security and to provide practical levels of visual accessibility for orientation and nighttime navigation. Inadequate or absent artificial outdoor lighting may transform welcoming surroundings into ominous spots shunned after dark. (Yeoh, 1997; Nasar, Fisher, & Grannis, 1993; Crewe, 2001).

This research attempts to experimentally confirm the influence of gender, built environment, greenery, lighting conditions, and presence of people examines the connection between perceived personal safety and street lighting in urban settings with mixed-use. This study's major goal is to comprehend how street lighting affects people's perceptions of safety. The following inquiries will be attempted to be answered in this research paper:

1. How street lighting affects the perception of safety in urban mixed-use environments?
2. What are the factors that affect the perceptions of safety during night time?

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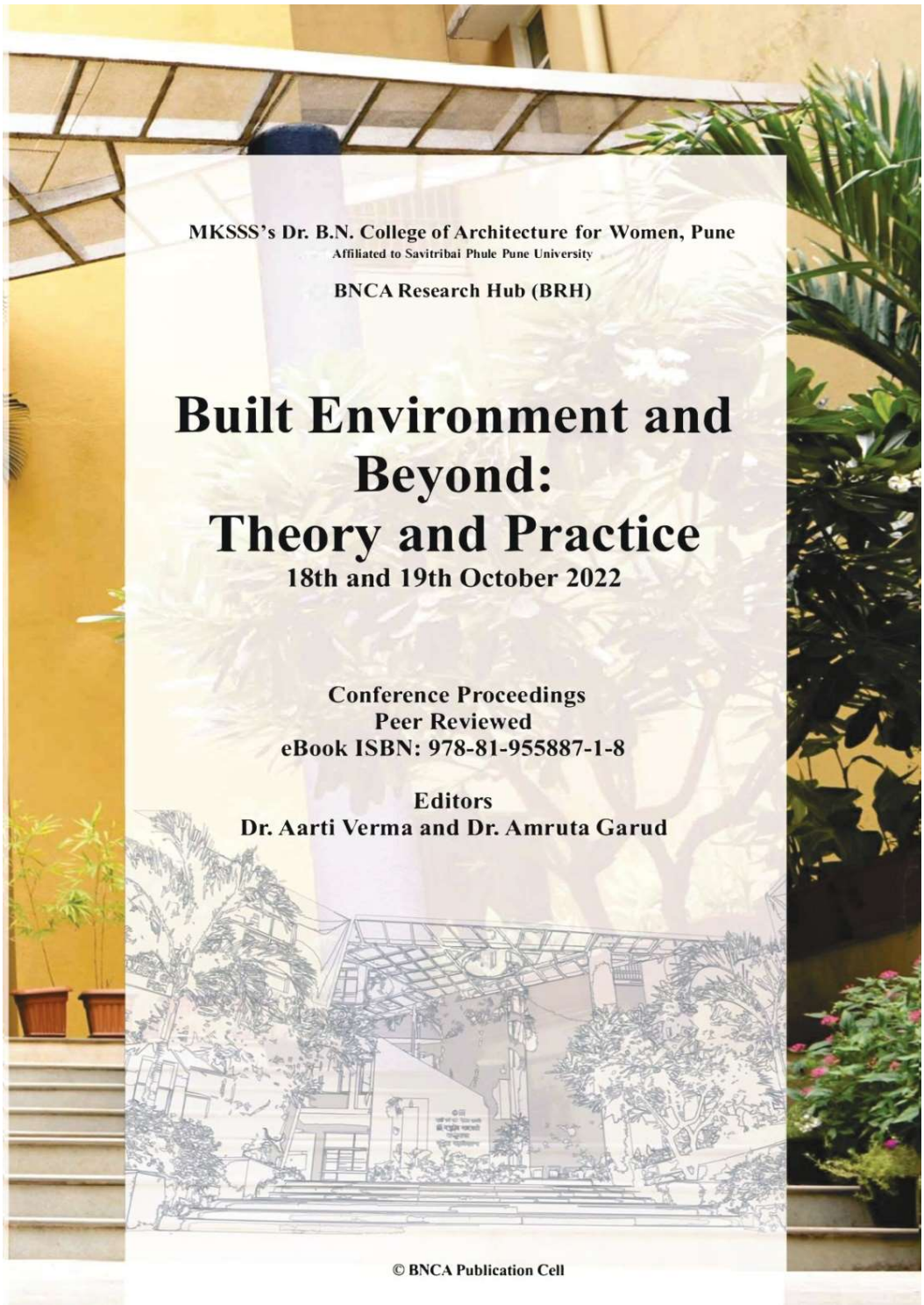

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TRACK 3: ARCHITECTURAL PRACTICE

Engagement with degraded urban landscapes toward future green infrastructure: Investigating people's association with abandoned Quarryscapes

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Abstract— The word 'abandoned quarry' evokes an image of a non-welcoming place that has no use for anything as the quarrying or the commercial extraction of natural stone has been stopped. These places in and around urban areas remain as ecological scars in the natural landscape. They end up being one of the most abused and polluted areas in the city causing harm to the overall health of the city's environment. These neglected areas may also provoke criminal activities within the land. The city of Pune and its surrounds in the state of Maharashtra, India is one such urban context dotted with abandoned quarries of basalt stone. The present research aims at investigating people's association with abandoned quarries in the city to understand the pattern of usage and the present condition of the abandoned quarries. The empirical data was collected through observation and photo documentation methods through field visits across the cityscape. The content analysis revealed that quarryscape is an integral part of the urbanscape. Despite the degraded condition, local people use these areas for various active and passive uses. The research emphasizes evolving an analytical framework for categorizing and understanding the relationships between attributes of the quarry landscapes and the behavioral pattern of the users. The paper brings forth tangible and intangible aspects related to quarryscape based on which association of people gets established with them. The results also reveal the potential of the present-day degraded landscapes to get reused as future green infrastructure spaces. Finally, the research concludes with design and planning recommendations for the future use of the abandoned quarryscapes as an integral part of the city's green infrastructure.

Keywords— Quarryscapes, people's association, degraded landscape, urbanscape, green infrastructure, landscape planning, urban landscape Introduction

1 Introduction

As Pune city is developing, abandoned quarries are now part of the city. So there is a need to involve the abandoned Quarryscape in the urban cityscape and develop them as urban open space.Creating a livable public space within the quarry boundaries is the need for urban wellbeing. For this, first of all, there is a need to find out the people's association with quarryscape by which one can improve or give a livable quarryscape experience. As Pune city has natural open spaces such as hills, lakes, and forest areas and designed open spaces such as parks, gardens, and sanctuaries. People use both spaces for leisure. If we treat the abandoned quarry spaces as potential open spaces we can increase the total area available for open space. The potential transformation of quarry sites into a variety of sustainable uses would not only remedy the negative effects of quarrying, but could create sites of greater social, and environmental habitable place for all.

Figure 1 Land Utilization - PMC(1987 DP +2001 DP) Source: DP 1987; City sanitation plan, PMC https://www.pmc.gov.in/mr/development-plan-old-city-limit-

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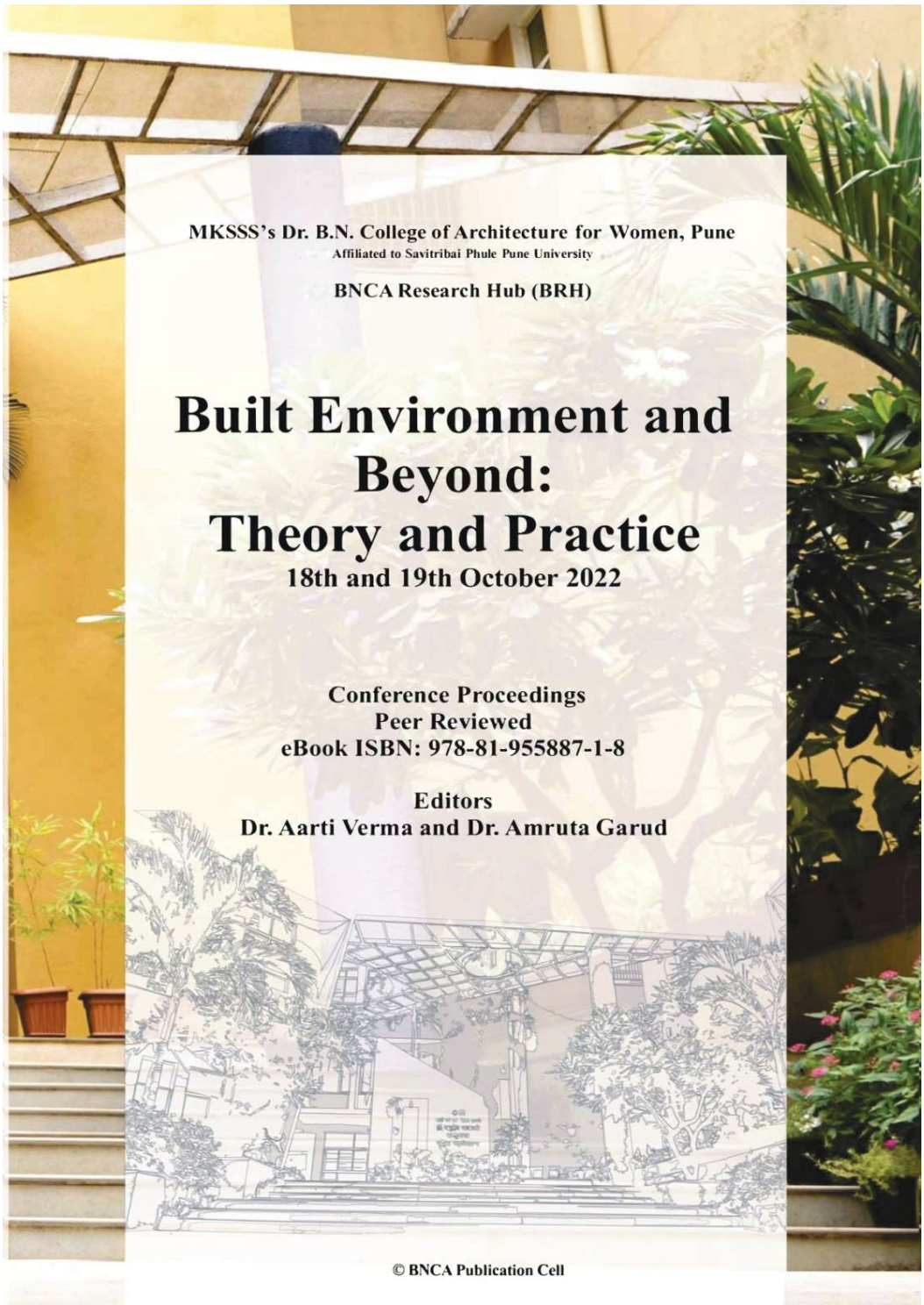

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TRACK 3: ARCHITECTURAL PRACTICE

Applications of Shape Memory Alloys for Enhanced Building Performance

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Abstract— Shape Memory Alloys (SMA) belong to class of smart materials with controllable mechanical properties in real time, upon external stimuli. This paper emphasizes on exploring the possibilities of use of SMA in everyday architecture and interiors of buildings. SMA possess unique characteristics of Super-elasticity and Shape Memory Effect. The present study demonstrates MATLAB simulation of the thermomechanical nonlinear hysteretic behavior of NiTi SMA for incremental and sinusoidal loading. Review of civil engineering applications of Shape Memory Alloys is carried out to evaluate their efficacy at various ambient Temperatures. The SMA applications evaluated include disaster mitigation, restoration of heritage structures, vibration control and energy efficiency of buildings. Due to lack of understanding about the technical limitations of SMA and the methods to apply them in a robust manner, very few patents have realized into commercial applications. The key findings of the paper indicate SMA applications in architecture and interior design are very limited, despite of increase in production quantity, improved quality control and reduced cost, due to complexity in analysis and predicting behavior of SMA.

Keywords— Smart materials; Shape Memory Alloys; Super-elasticity; Shape Memory Effect; Building Performance.

1 Introduction

Technological advancements are one of the key factors leading the human race to the modern world. Various types of materials discovered by mankind and effective harnessing of their properties have accelerated technological advancements to reduce human effort and improve the quality of life. Recent past has seen discovery of smart materials, having ability to modify their mechanical properties in real time upon being stimulated by external sources like electricity, magnetism, temperature etc. Smart materials can be broadly classified as piezoelectric, magnetorheological, photoactive, Shape Memory Alloys and chromoactive materials. Piezoelectric materials produce electric current when subjected to mechanical stress. The applications of piezoelectric materials include medical instruments, cellular phones, sensors, actuators, vibration control etc (Uchino, 2017). Magnetorheological materials have their viscoelastic properties controlled by applying and varying magnetic field. Application of MR materials is seen in the field of automotive industry, mechanical engineering, optics, aerospace and prosthetic elements (Park et al., 2010). Photoactive property allows material to activate in the presence of light. Applications of photoactive material are observed in the field of photonics, environmental sciences etc (Blanche, 2021). Chromoactive materials change color in the presence of temperature. Applications of chromoactive materials are in invisible ink, document detection, optics etc. Shape Memory Alloys are smart material which change their crystal structure orientation resulting in modified mechanical properties in the presence of temperature, magnetism and mechanical stress. SMA based applications are seen widely in the field of automotive, aerospace, robotics and biomedical engineering (Jani et al., 2014).

2 Literature review

The history of smart material dates back in 1880 when Curie brothers discovered piezoelectric effect. In 1932, phase transformation in Gold-Cadmium alloy was observed followed by phase

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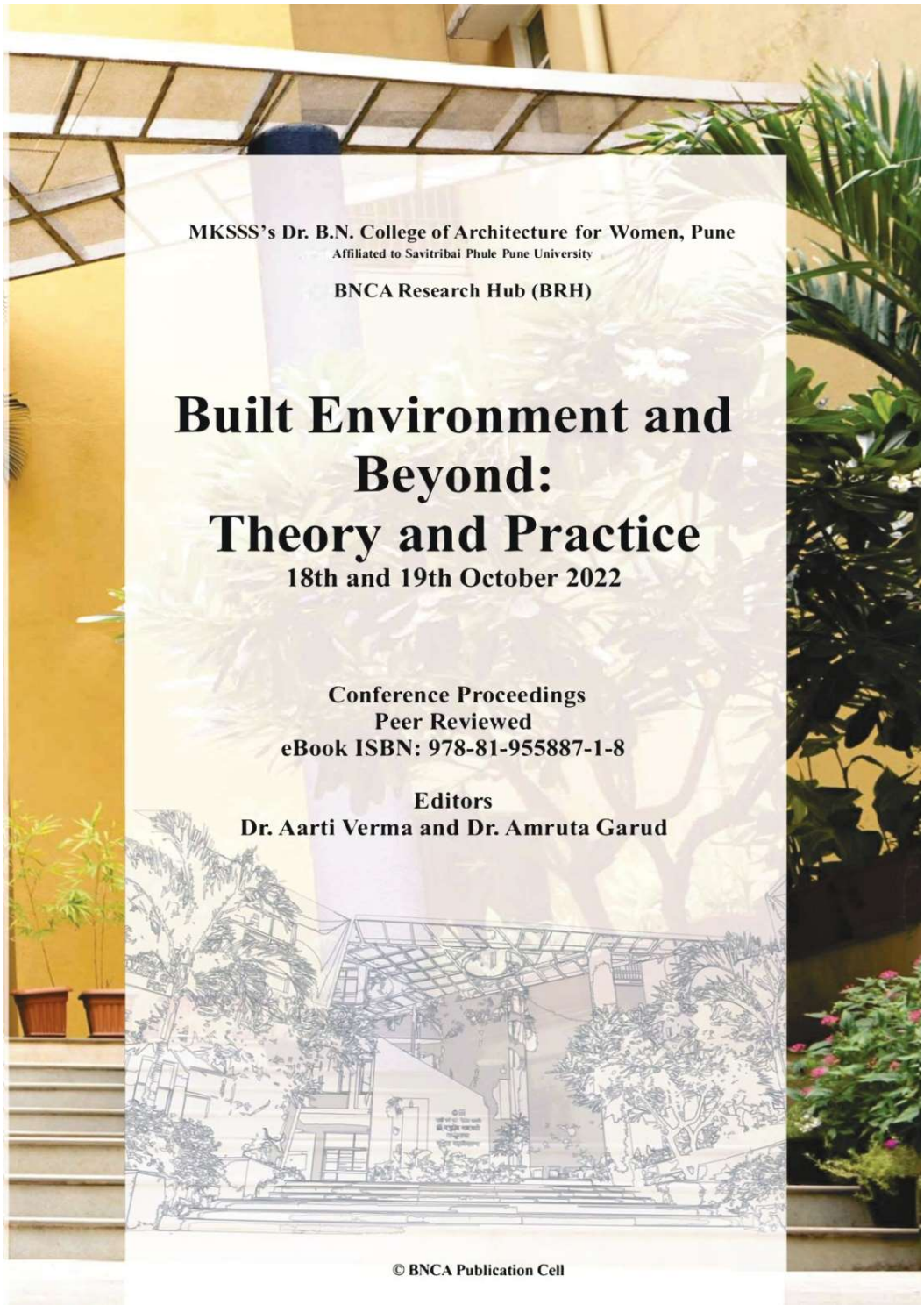

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TRACK 3: ARCHITECTURAL PRACTICE

An Objective study on National Education Policy 2020 in relation to Indian school design

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Abstract— Primary education is considered as an important element which can play a significant role for the overall development of a country. It is well known that the availability of school infrastructure has a significant impact on the school environment and it is also one of the key indicators for evaluating whether a school provides a favorable learning environment for children. Over the past two decades, various educational institutions have focused on improving the school environments by different educational programs. However, the basic design module of Indian schools still lacks in providing the essential facilities. Thegap between the current state and desirability of learning outcomes must be bridged by implementing comprehensive reformsto achieve this highest quality and integrity in the system. This national education policy is the first education policy of the 21st century, and aims to meet the country's many growing development needs. This Policy proposes the revision and revamping of all aspects of the education structure, including some new design modules for schools. The purpose of this research is a scrutiny study of the qualities and peculiarity of modern Indian schools through analytical evolution of NEP andexamining the implications for future school module. To begin this study, premier schools of Pune city, exemplifying a typicalurban school, were identified for a pilot study. The methodology encompassed interviews with executives, observations by researchers and interaction with students to understand and critically break down the usage pattern by principal users of the school and how the gap can be filled for the future. It brought to fore an understanding of mandatory prerequisites for the school infrastructure and the policy's vision for future schools. In conclusion, the article emphasizes on the design parameters of upcoming school module with respect to NEP.

Keywords — National Education Policy; school design; spatial attributes; environmental variables; future schoolmodule; design parameters

1 Introduction

Realizing our potential, building societies and promoting progress in the world all depend on education. In India,the second most populous country in the world, a significant number of students attend the school. This can be attributed to the positive public reaction to the government's efforts to promote basic education. This has given schools and their communities a responsibility to shape the minds of vulnerable young people forsheer numbers. As well as learning how to learn is becoming more and more important. Education needs to be less content, more creative and interdisciplinary towards critical thinking and problem solving. The new educationpolicy requires reform not only of education, but also of the educational spaces. After a new era of NEP and technology. This paper aims at understanding such an impact through a study of school environments in India. Such an immensely potent study is lacking in the Indian context given the physical and spatial circumstances of majority of our schools: private as well as government.

This research was initiated in response to the need for a fact-finding mission to know the basic situation of a typical urban school in India and its response to NEP 2020. For this purpose, prominant schools in Pune City wereidentified as an example of the above. As a pilot study, a critical post-policy assessment of the school environmentwas planned and conducted. It helped to understand the essential problems in the current design of Indian schools. The nature of the educationalprocesses and teaching-learning activities the study helps to figure out the essential features of a typical urban school environment, such as: Their spatial patterns, interior environments, and their architectural representations.In addition, this preliminary study explores the many user-related issues of school design and the problems encountered in achieving its main objectives, despite the recommendations

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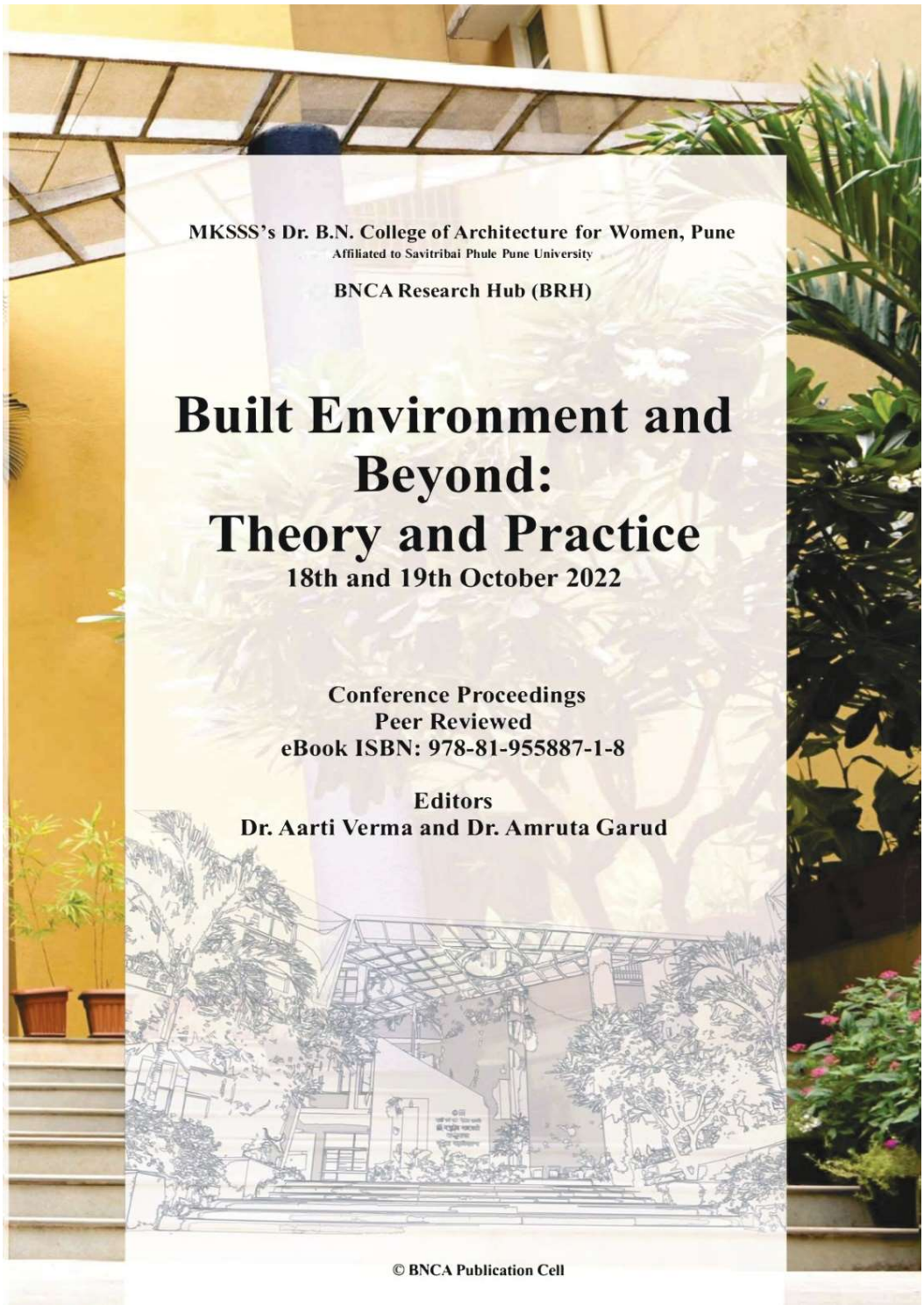

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TRACK 3: ARCHITECTURAL PRACTICE

Biophilic Landscapes: Challenges in planning, execution, and maintenance of non-artificial vertical green wall systems in India

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Abstract— The biophilic landscapes are of significant value for well-being in an urban environment. The importance of these landscapes for human wellbeing is better understood during the pandemic lockdown times. They are also important from the urban food security and urban biodiversity perspective. The trend in the use of biophilic landscapes is seen abroad in the US, European, and other Asian Countries. Non-artificial vertical green walls form one of the major typologies of biophilic landscapes. The majority of current research in green walls is centered on system design to produce improved technical outcomes and performance. (Manso M., Castro-Gomes J. 2015). In India, vertical green wall technologies have started gearing up, but have not yet been seen to be used extensively. The studies about the challenges of green wall systems are based more on non-Indian/ foreign contexts. This paper explains the challenges in planning, execution, and maintenance of non-artificial vertical green wall systems in India. The survey method is used for the study which assesses both the technical and nontechnical challenges from the focused sampling of executors of such non-artificial vertical green wall systems in India. The discussion and findings analyze the relationship between the independent variables (planning, execution, and maintenance of vertical green wall systems) and the dependent variable (challenges in vertical green wall construction in India). This understanding of challenges shall help understand the reasons for the underuse of this technology in India, thus helping in guiding further solution-based research helping in problem-solving in the Indian context. By overcoming the challenges green wall systems can evolve to become more sustainable solutions in India in the future. This study has also helped in Industrial- Academia research work under the Landscape Lab at Dr. Bhanuben Nanavati College of Architecture for Women, Karvenagar, Pune, and Maharashtra, India.

Keywords— Vertical green walls; challenges; planning; execution; maintenance.

1 Introduction

Biophilic design is an approach that relies on biophilic principles and offers a potential framework or pathway for fostering a sense of connection between people and nature. This is consistent with suggestions to strengthen interactions between people and nature as a means of addressing our climate crisis and ecological separation. (Maria Beatrice Andreucci, 2021). The importance of biophilic landscapes was better understood during the pandemic lockdown times when access to nature got very limited. Biophilia is important in urban areas from the urban food security and urban biodiversity perspective and can greatly enhance the ecological and aesthetics of urban facilities.Although biophilic design is becoming more and more popular, there is still a lack of specificity in research variables and results. Many design communities have a tendency to dismiss it as "nice to have but disposable" rather than an effective intervention to improve performance and health in urban areas. The potential benefits of such treatments and the most effective way to put them into practice are still largely unclear.Andreucci, 2021)Biophilic landscape designs zoom in on scales smaller than those of cities, neighborhoods, and buildings. In both indoor and outdoor settings, one of the biophilic elements is non-artificial vertical green wall installation solutions. This paper focuses on only the non – artificial Vertical green wall systems as a biophilic element at the building scale used in an outdoor and indoor environment.

Faculty: **Ar. Sayali Andhare and Ar. Khushboo Agaarwal**
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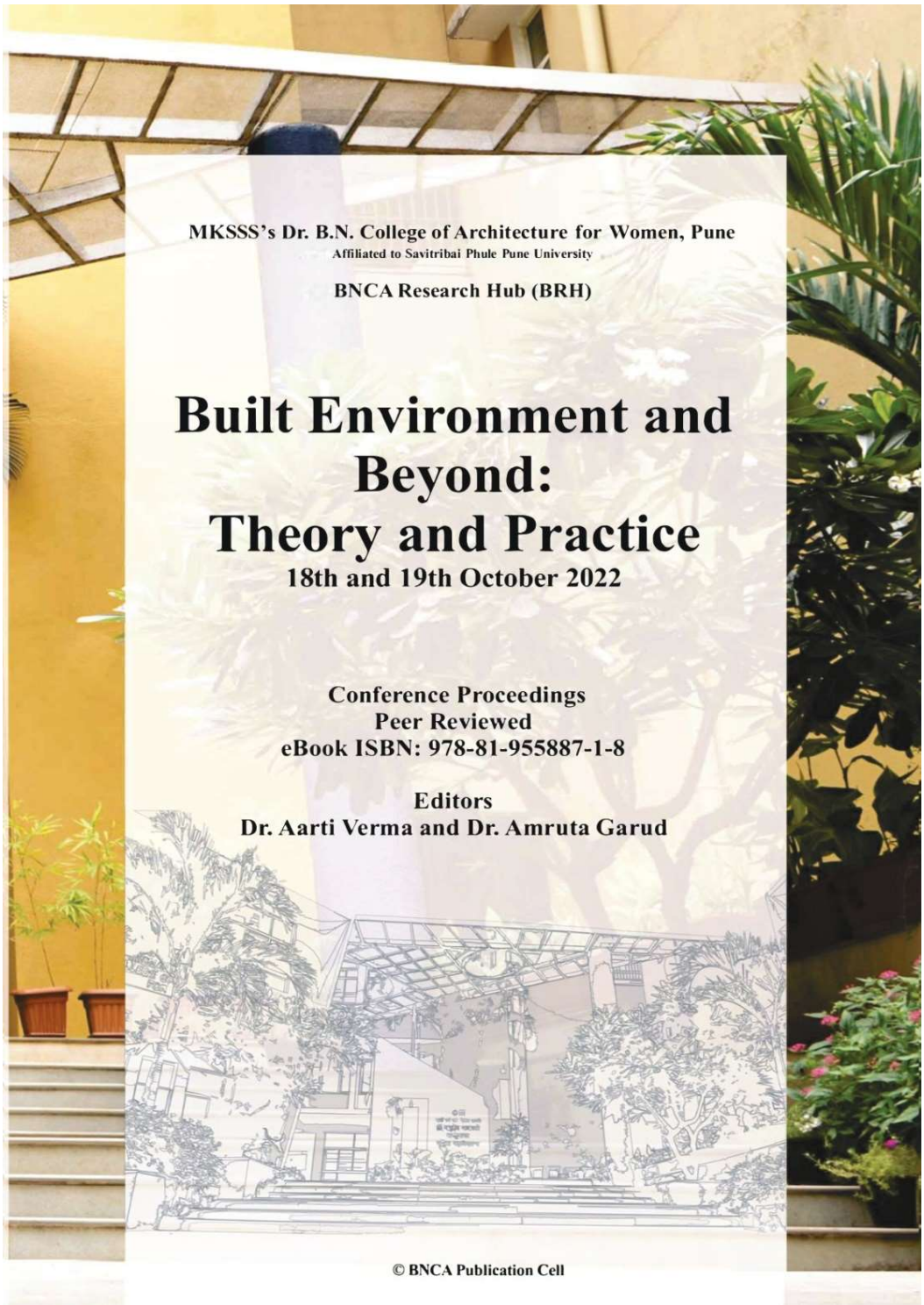

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TRACK 3: ARCHITECTURAL PRACTICE

Identification of Potential, Advantages, Prospects, and Impediments of using Bamboo as a Building material - Stake holders' perspective with reference to Indian context

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Abstract— The gaining momentum of the concept of sustainable development, green buildings have become the main development direction of future architecture. As a kind of eco-friendly material, bamboo is an attractive and sustainable building material over the past decade. Particularly popular on the Asian subcontinent, where the plant is most abundantly grown, use of bamboo for buildings is part of age- old tradition in India. The main goal of this paper is to use parametric tools to investigate the potential of bamboo as a building material for various structures, particularly those with complex organic forms. The paper will also discuss the opportunities and issues that have hampered bamboo's acceptance as a preferred material for modern architecture. The research also focuses on the use of digital technologies to strengthen materials to enable future material in the building sector. Literature review was conducted to understand various issues and development about bamboo as a construction material. Case Study method is used to study various typologies of bamboo building in India and abroad. Delphi method was used for answering a research question through the identification of views of subject experts who are also stake holders. This method helped to gain reflection about Bamboo as a construction material amongst participants. This research is limited to Indian context only. The main findings from this paper are: Bamboo has both disadvantages and advantages. The root causes of all barriers are identified as a lack of awareness about bamboo materials, an unorganized supply chain, exclusion from standards, outperformance of industrial products, a lack of innovation and institutional support and bamboo's mechanistic limitations. This paper identifies underlying challenges and opportunities that underpin bamboo material usage patterns in the construction sector.

Keywords— Bamboo; Building material; Complex forms; Barriers and benefits; Digital technologies; Stake holders

1 Introduction

Since a very long time ago, bamboo has been used for construction purposes. Bamboo is a common building material for both structural and non-structural purposes in traditional homes throughout Asia and Indonesia. Because bamboo grows incredibly well in the tropical belt, it is used in traditional homes. Due to the availability of other similar designed and user-friendly materials like brick, concrete, and steel, bamboo as a building material has become outdated in today's world of rapid urbanization and industrial growth and is only used in a small number of rural locations. Bamboo is viewed as an "Inferior" and temporary material. Additionally, it is seen as a low-class material and is even referred to by many modern builders as "the poor man's timber" (Maxim Lobovikov, 2009).

2 Literature review

With the growing concerns about "climate change," "global warming," and "sustainability," the world as we know has indeed changed, and we now emphasis on making our environment greener

Faculty: **Ar. Yash Joshi and Ar. Shruti Ramteerthkar**
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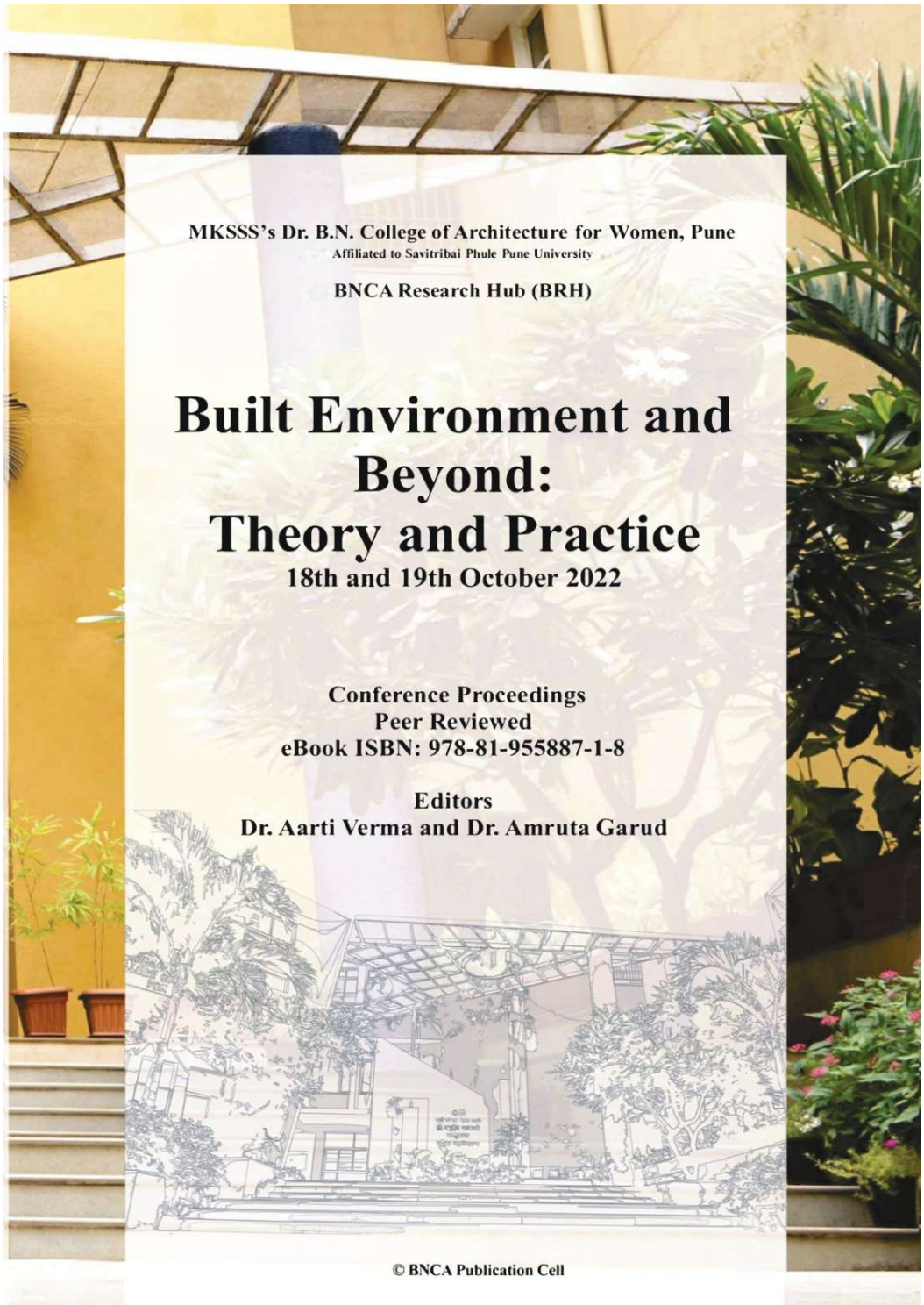

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TRACK 3: ARCHITECTURAL PRACTICE

Is the consideration of Intangibles equal to Tangibles in Heritage Conservation

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Abstract— Heritage is a link to our past, forming our present and influencing our future. The built environment is made up of tangible and intangible elements that constitutes the space around us. We come across innumerable tangible elements that denote the intangibles which are deeply rooted into the psyche of the people and the region. History showcases that the beliefs, traditions, and stories are the ones that weave together to build the tangible environment. This article discusses various ways of interpretation, representation, preservation and conservation of tangible and intangible cultural heritage. It tries to showcase that irrespective of the influence of intangibles over creating the tangibles in the built environment, the intangibles are being ignored to a certain extent while undertaking conservation. To support the argument, the writeup showcases a comparative analysis of 3 Ainmanes, the ancestral houses in the Coorg region of Karnataka which have been conserved and are open to public, researchers and studies alike. The stark differences between them highlight the methodology of their preservation and sheds light on disturbing the original fabric. The study attempts to document instances where intangibles are getting side-lined during conservation practices. It sheds light on numerous ways to be considered while conserving, the processes to be followed should represent the culture and the local beliefs and replace/replicate the original way of architecture that existed. The article also tries to document the views of architects and non-architects regarding the importance of intangible elements while reviving the built heritage and how one associates with one's heritage. The paper concludes while opening an argument on whether the consideration for intangibles has to be equal to that of tangibles while preserving and conserving built environment and how it can help in understanding the evolution and development of not only the tangible architecture but also the intangible society.

Keywords— Heritage; Intangible; Culture; Built Environment; Society; Tangible

1 Introduction

India has always been a pot full of intriguing stories, folklore, kingdoms, battles, changing borders, lands and water bodies. To a very large extent, the evolution of architecture has depended upon various factors like the study of historical references to the timeline, the geographical context, cultural stimuli, constantly changing reigns of kings imposing distinctly different authoritative powers and politics. And along with all these parameters, the interrelation between human lifestyle and built environment through this sway is all the more intriguing. There are facts and tangible proofs in the form of scriptures, books, architecture, science and art, that support the evolution yet the stories and narrations do end up telling a lot more about people, behaviour, various customs, traditions and beliefs. The oral translations and sessions passing from generation to generation actually become very vital in conveying the social fabric and the intricate details about the human lifestyle and how it has been shaping up since ages and influencing the other facets simultaneously. The historical accounts and the past have remained frozen in time and space but the cultural beliefs, customs, traditions and the spiritual theories have been handed over to the present in the form of heritage that comprises of local enigmatic cults, sects, groups and communities of people. The different locations, climatic conditions, their proximity to the cities, the stages of development and the religious nuances add in a flavour to the dresses, foods, cuisines, construction materials and in general, the daily lifestyle pertaining to a group or community. Together, they can be summarized into a culture of a particular place which is an amalgamation of tangible and intangible heritage. While the tangible elements are easier to recognize and identify, the intangibles are subtler. If we start taking a closer look and decipher the tangibles, the clearer the intangibles become and help us

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Faculty: **Ar. Mandar Athavale**

Title of the Paper: **Post Occupancy Evaluations Of In-Situ Slum Redevelopment Projects: Case Of Ahmedabad And Pune**

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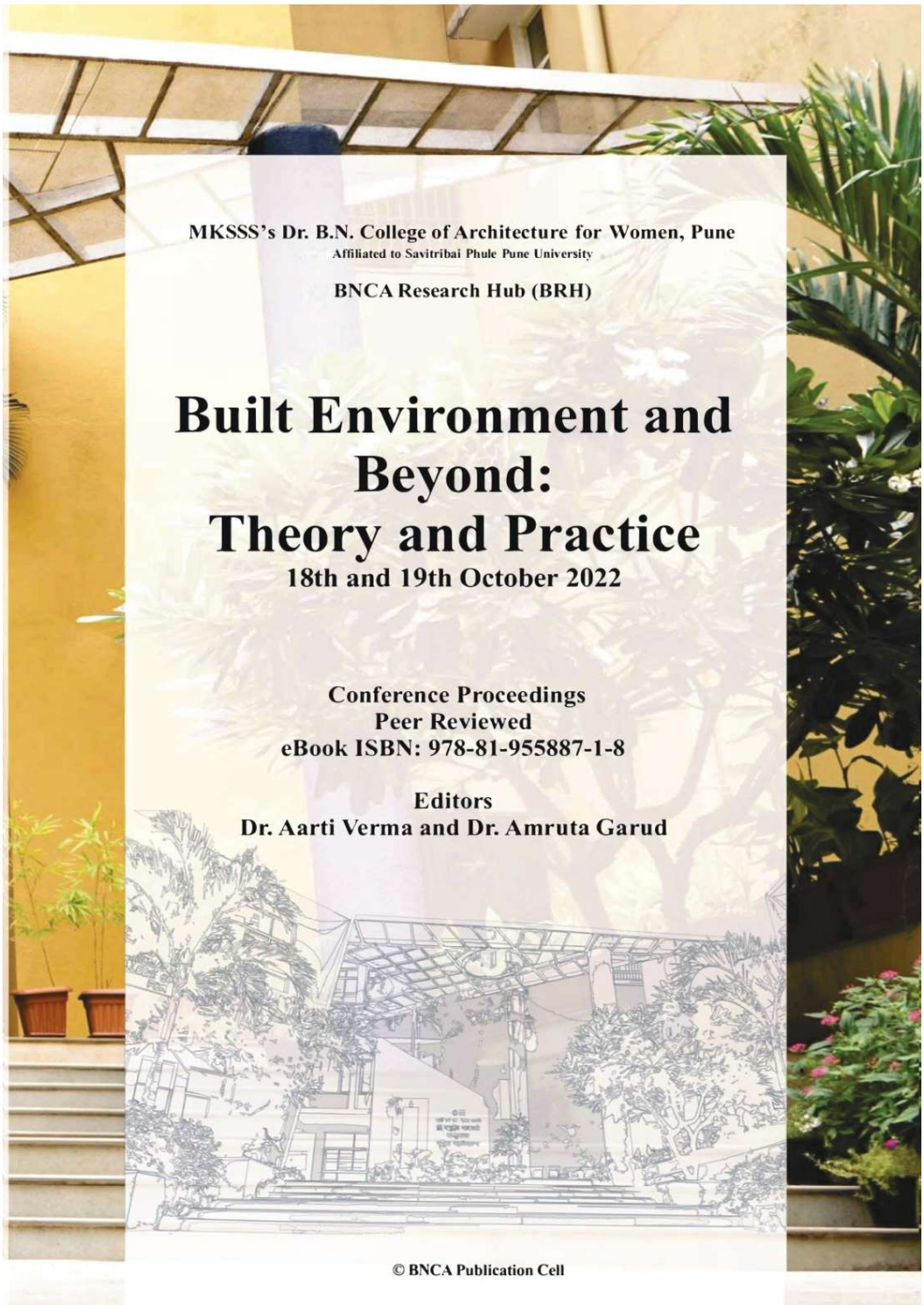

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TRACK 3: ARCHITECTURAL PRACTICE

Post Occupancy Evaluations of In-situ Slum redevelopment projects: Case of Ahmedabad and Pune

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Abstract— The in-situ slum redevelopment component of the housing policies in India proposes a solution in providing pucca house to the eligible beneficiaries, possibly at the same site; by tackling land shortage problems in urban areas occupied by squatter settlements which is termed as In-Situ Slum redevelopment (ISSR). In solving the problem of access to affordable housing it is important to have forward-looking tools to create better homes for the slum dwellers, but also there is a need for backward-looking tools to measure its performance, successes, and failures in hindsight. One of the primary aims of Post Occupancy Evaluation (POE) is to generate user-centric feedback, by encouraging participation of the beneficiaries, which shall help in assessing the ISSR projects in a new light and learnings from which shall add substantial value to the future projects. The POE has been developed by adapting the Sustainable Livelihood Framework. It primarily focuses on assessing the physical, social, financial and human capitals of the projects. Due to some constraints, Natural capital (environmental aspect) has not been included in the study. The study, unlike conventional POEs, does not intend to research only the infrastructural aspects of ISSR projects but has assessed the projects for different essential indicators. When we analysed the ISSR landscape, we found a gap in how the role of NGOs helped in creating better livability in such redevelopment projects versus the ones with little/no NGO consultation. We studied projects in Ahmedabad and in Pune with different approaches to redevelopment restricted to the scope of in-situ slum redevelopment. The research further suggests reintroducing human-centred-policy design and participatory implementation through pre and post occupancy evaluations that puts the beneficiaries' perspective at the forefront of policy design and implementation.

Keywords— Affordable Housing; Post Occupancy Evaluation; In-Situ Slum redevelopment; Community participation; Governance.

1 Introduction

In 2011, 31% of the total population in India lived in cities. Out of which, 17% of the urban population resided in informal settlements, areas commonly known as slums, with little or no basic amenities and services like water, electricity, street lighting, and access to clean toilets (Government of India, 2011). The Government has undertaken various initiatives to promote urban infrastructure but there is still a looming housing shortage in the cities. The current housing shortage is more acutely felt within the EWS (economically weaker sections) and LIG (lower income groups), which predominantly settle in slums post migration. Recognizing this need, the Central Government launched various housing schemes over the years and the current ongoing scheme is the Pradhan Mantri Awas Yojana (Urban) Mission in 2015, which intends to provide housing for all in urban areas by the year 2022. Particularly, the In-Situ Slum redevelopment vertical facilitates redevelopment of notified slum sites into residential and commercial spaces, in partnership with private developers.

Stating the current Housing for All Mission – currently till date 112.24 lakh houses have been sanctioned, but only 55% of them are completed/delivered. Hence as 45% are still yet to be completed, learnings from the ground will help in creating a feedback loop.

Faculty: **Dr. Amita Pradhan**

Title of the Paper: **Digital Transformation Of Library And Information Services In Architecture**

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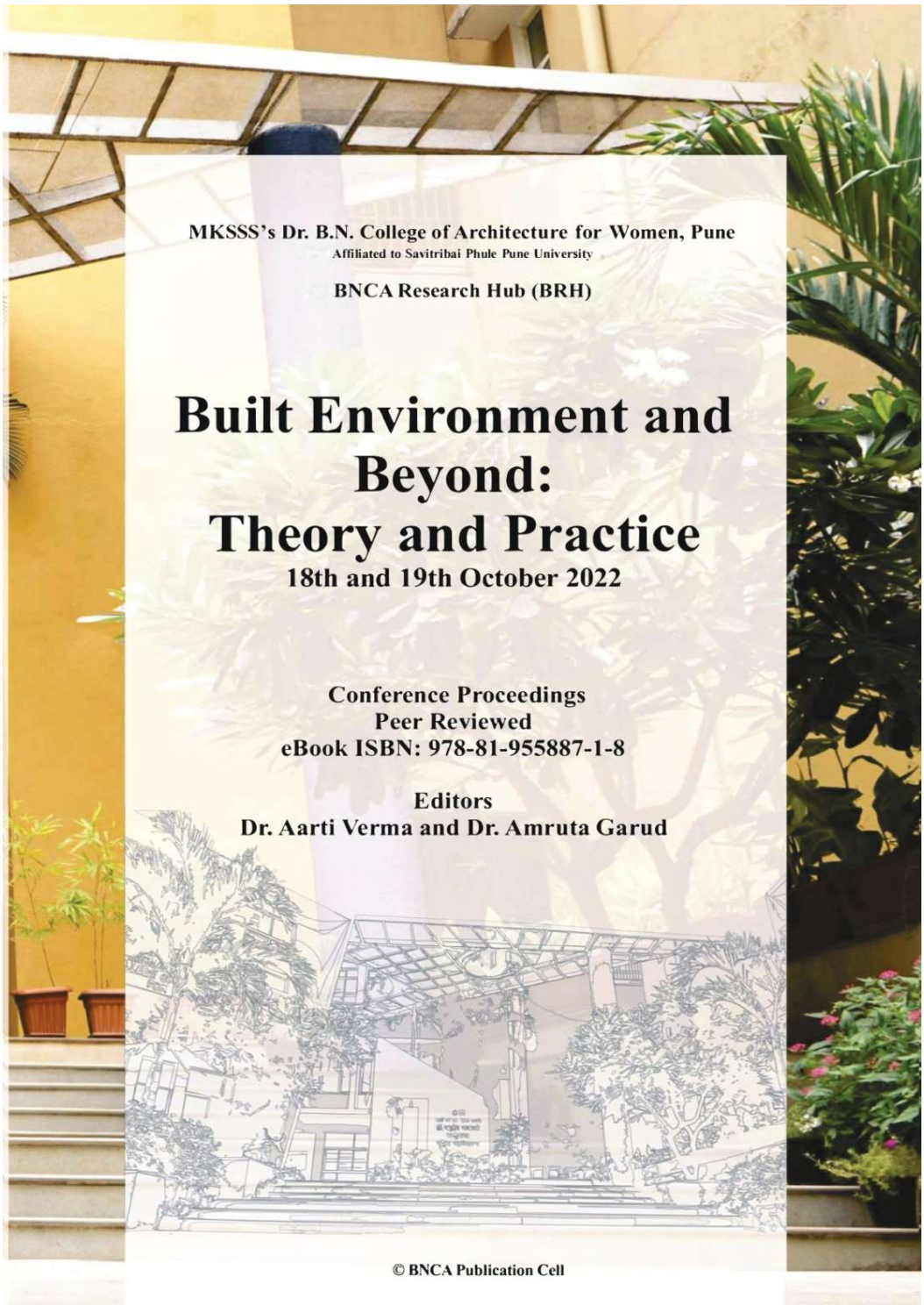

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TRACK 3: ARCHITECTURAL PRACTICE

Digital Transformation of Library and Information Services in Architecture

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Abstract— Libraries are being called 'Knowledge Resource Centres' according to the New Educational Policy (NEP 2020). The foundation of it is Access, Affordability, Equity , Quality and Accountability. Access and Affordability with Quality of Knowledge for lifelong learners is the main objective of NEP2020. It emphasizes the importance of Library and Information Centres and its services in the new technological set-up, specially, after the Pandemic situation. This paper aims at studying the architectural Library and information system in perspective of Digital services vis-à-vis physical existence. Architectural Library documentation has various types ranging from Books, journals to maps, drawing, projects , settlement studies, product catalogues etc. E- resources, e- content , audio-visual material, photographs are the vital parts of the library collection. There are total 28 Architecture colleges in and around Pune city. Out of them 24 are affiliated to Savitribai Phule Pune University (SPPU).The author proposes to study the services offered by Library and Information Centres of these Education Institutes, using latest technologies for catering the needs of their patrons. This paper would intend to illustrate the co-existence of Physical as well as Digital Libraries in Architecture colleges in Pune city. The Researcher would use Survey method for present Research and conduct study of services given to users by the Architecture college Libraries in Pune City, using the latest technologies. In the conclusion and suggestions, the author wants to focus on the co-existence of physical as well as Digital Libraries, which would render variety of services to its user groups and satisfy their knowledge objectives. In the end the author intends to develop a model of traditional and Digital Services for Architecture college Libraries.

Keywords— Library Services; Architectural College Libraries; Digital Library; Library Technology, AI based applications in Library.

1 Introduction

Librarianship starts right from invention of paper and printing technology to make multiple copies of books store them, retrieve them and circulate them amongst people. Now a days, information is observing a proliferating growth and so does the library profession is growing in multiple direction. Knowledge spheres are being expanded, with that the need of information also is becoming multifold. This was supported by the variousinventions in Information Communication Technology (ICT). After World War II, the technology became the indispensible tool to communicate and further generate information. It became easy to share and utilize information from old Arpanet to recent World wide web. Globalization of Information took place with internet protocols and expanded web communities. The discipline of Architecture emerged from Nomadic Tribe –Cliff dwellings to most recent sophisticated and lavish and state of art colonies of human civilization. Now it is has become a full proof branch of Formal education and knowledge. Architecture Libraries are important backbone in the knowledge dissemination system in architecture college and council of Architecture has stated its importance.

Libraries are being called 'Knowledge Resource Centers' according to the New Educational Policy (NEP 2020). The foundation of it is Access, Affordability, Equity , Quality and Accountability. Access and Affordability with Quality of Knowledge for lifelong learners is the main objective of NEP2020. It emphasizes the vitality of Library and Information Centers and its services in the new technological set-up. Being observant about the Library development and design, the author intended to study the Architecture college libraries in Pune city and vicinity. A survey was conducted of 18 libraries in the aspect of area they cover, collections they have and services they offer to patrons.

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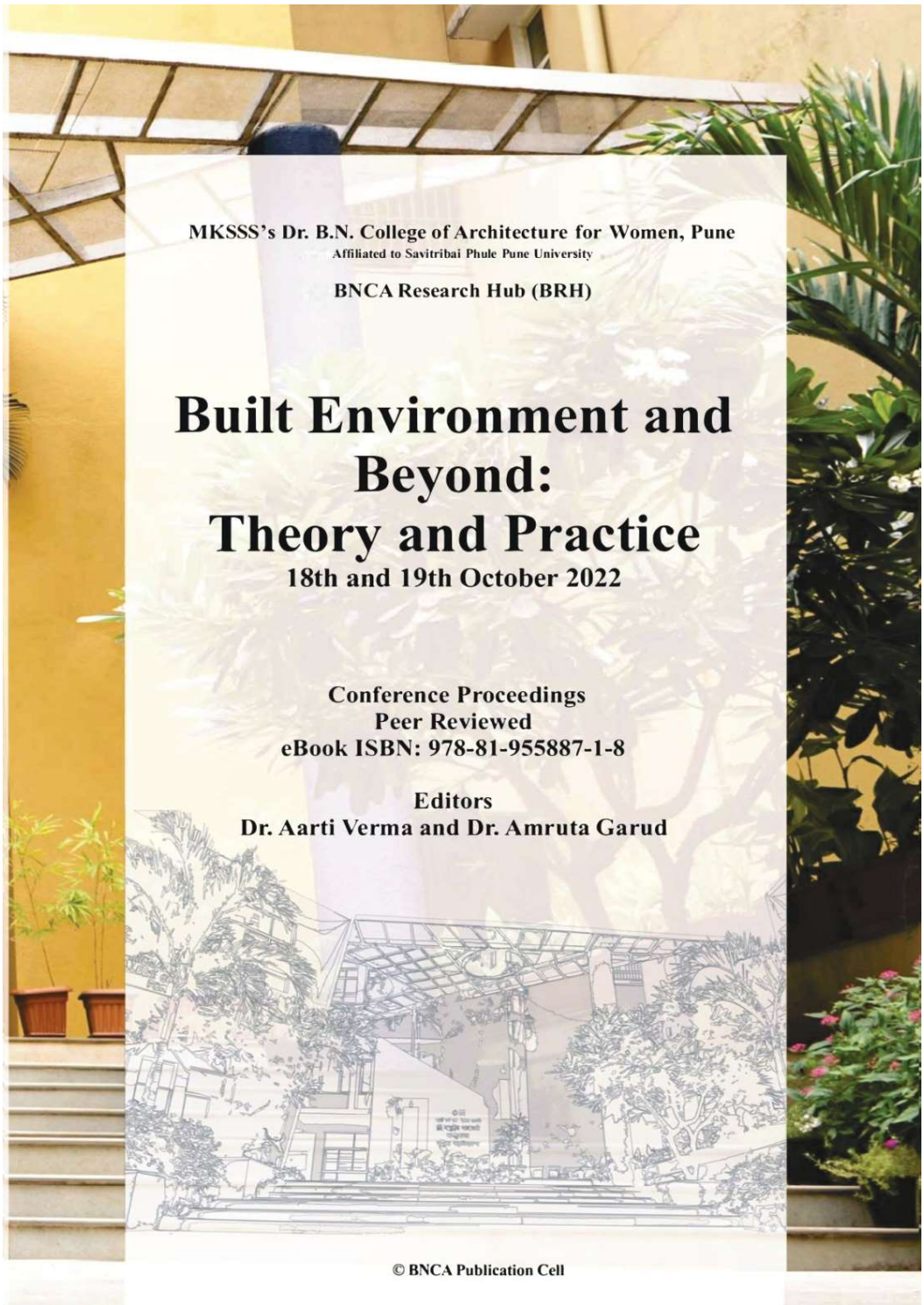

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TRACK 4: ARCHITECTURE AND PLANNING

Loss of Cultural Identity in Indian Cities: Recognizing the sense of place and the reasons behind its loss

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Abstract— Most Indian cities are social cities. When we walk through older Indian cities, we can observe the unique character of the places, for instance the chowks where people congregate, the chourahas, and the building structures with their distinctive architectural features that are lost in most modern towns. In terms of architectural features each old city has its own character, which is fading in new cities. Cities across India lack this sense of community and a sense of identity. This identity develops over a considerable amount of time rather than in a single night. Geographical elements, cultural identity, traditions, customs, architectural aspects, etc., all make up a city. These elements make up a town's very soul. The continuous change and regeneration of cities leads to the loss of this very essence that makes every city unique. Which leads us to a very valid concern: "How are we losing the identity of an Indian city?" The paper's main goal is to explore this issue while considering the effects of losing city identities with an emphasis on both literature study and case studies. Principal goal of the study is to evaluate and identify how continuous and haphazard development without proper consideration to the town/city leads to the loss of the city's local identity. To understand how globalization is affecting the local identities and how post globalization every city is losing its distinct identity. In this research paper the effects of globalization and the loss of local identities are evaluated in terms of architectural planning, and urban planning while also considering what the people feel who are living in that city. This paper is divided namely into three parts, the first part discusses the relationship between local identities and globalization, the second part discusses the loss of identity in the field of urban morphology and the third, discusses the effects of non-regulatory planning on the city without considering the local identities. We try to apply the lessons from western cities while entirely ignoring our own identities and the unique contexts that each city has to offer. Because they lack a distinct identity, most modern communities have a similar appearance. Urban planning's tendency toward homogenization and standardization has led to a progressive loss of identity in Indian cities.

Keywords— Sense of Identity, Character, Communities, Architectural element, Sense of place

1 Introduction

1.1 Relevance of research-

Cities have pockets full of historical and cultural linkages that provide residents with a sense of place and identity. When we talk about how cities have formed, different factors give rise to a city, some cities are formed around a prominent temple, hence the temples towns other towns are administrative towns, commercial towns, or port towns. Every city has a distinct feature and lifestyle, regardless of the factors that formed it, such as temple towns, which formed a very understandable structure due to its high degree of axiality, greater spatial synchrony in a regular settlement pattern, and high degree of connectedness with integration centers settled on the temple. Identity of a city namely, tangible, and intangible elements. Cities began to grow quickly because of the advent of globalization to accommodate the influx of people moving from rural to urban areas. The city planning was altered because of the growing urbanization and regeneration. It finally resulted in cities being constructed similarly, resulting in similar skylines.

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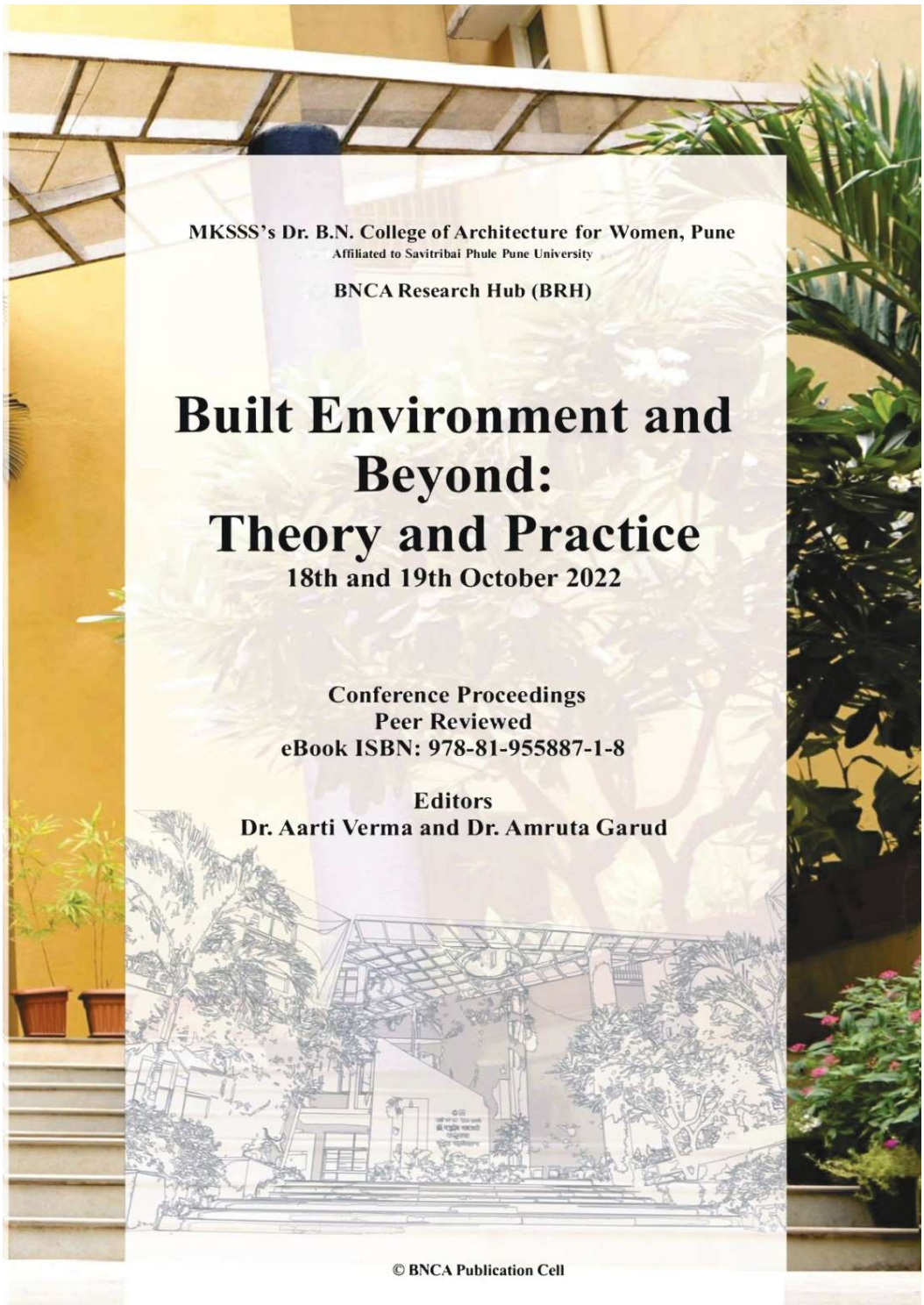

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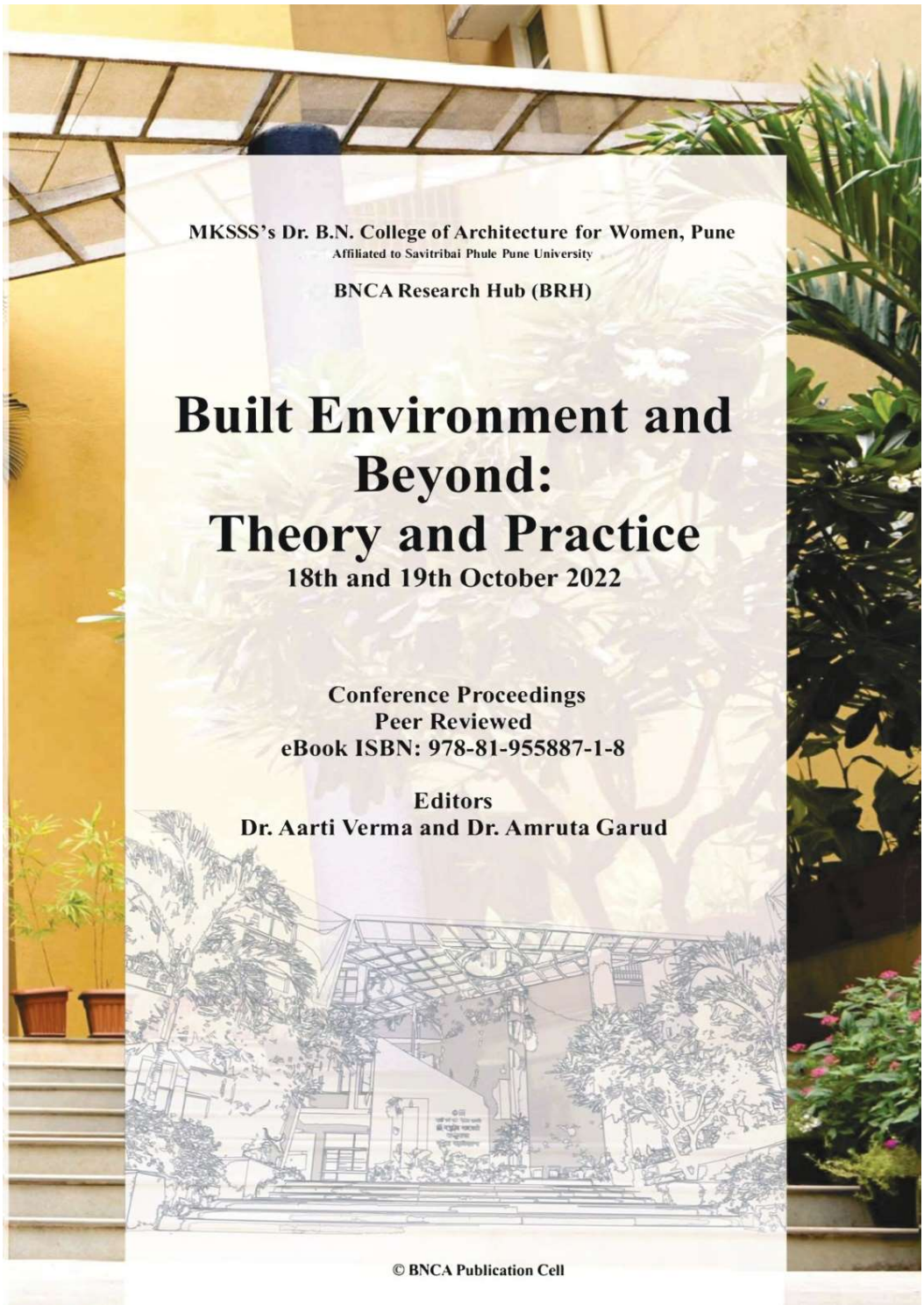

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TRACK 4: ARCHITECTURE AND PLANNING

Giripradakshina: An Experiencial Spiritual Tourism and its Role in Development of Physical Infrastructure of Tiruvannamali, Tamil Nadu, India

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Abstract— Tiruvannamalai, an ancient spiritual town located at foot hills of Arunachala hill in state of Tamil Nadu, South India is one of the greatest Saivite shrines having unique historical background. People from all over the country visit this town to satisfy their purpose of religious tourism or to gain spiritual energy based on the religious festivals performed at the Arunachaleshwara Temple as well as by performing fourteen kilometer Giripradakshina to Arunachala Hill. The aim of this research paper is to discuss the historic background of Tiruvannamali and experiential walk of Giripradakshina as source of spiritual tourism. The further aim is to identify issues related to physical infrastructure facilities for planning of Giripradakshina as a pedestrian walkway, thereby enhancing the walk of spiritual experience for the devotees and increasing the importance of its recognition in developing Tiruvannamali as global spiritual center in South India.

Keywords— Arunachala Hill, Giripradakashina, Spiritual Tourism, Physical Infrastructure

1 Introduction: India as a Religious Country

India is the country having diverse socio-cultural communities representing their religion. It has diverse cultural zones which are either historical based, religion based, political based or economic based. All these unique zones have strong history of evolution which is either rule based, caste based, mythological based, philosophical based, divine based or spiritual based. In today's era of globalization people are getting engrossed in the lifecycle of world of modern technology. This has resulted in increase of the psychological stress amongst the people. To counter act to the daily stress of life the people are attracted to their origin of socio-cultural phenomena and thereby their religious environment. In India, also known as land of pilgrimage, the people are attracted towards the site visits for pilgrimage purpose or as a tourist group to the religious towns. All religions such as Hinduism, Buddhism, Jainism have their major and minor pilgrimage centers spread out in different parts of the country, mostly located along the river banks or foothills of sacred mountains. This spiritual or holy visit of people individually or in group to these towns having religious importance has evolved the concept of religious tourism. This is also supported by diverse festivals representing local culture which vary from region to region from South India to North India. This reflects the people's psychological attraction towards these places, either as their divine missionary or for leisure purpose. Spiritual journeys are additionally one type of religious tourism that is on the rise, as people are increasingly looking to develop their own spirituality and to discover that of others. It is based on traditional religious tourism and is looked upon as means of alternative medicine or close contact with nature.

Faculty: **Anuja Kale and Ar. Madhuri Zite**

Title of the Paper: **Impact Of Commercial Gentrification On The Community Wellbeing In Residential Areas: Astudy Of Developing Streets Of Nashik City**

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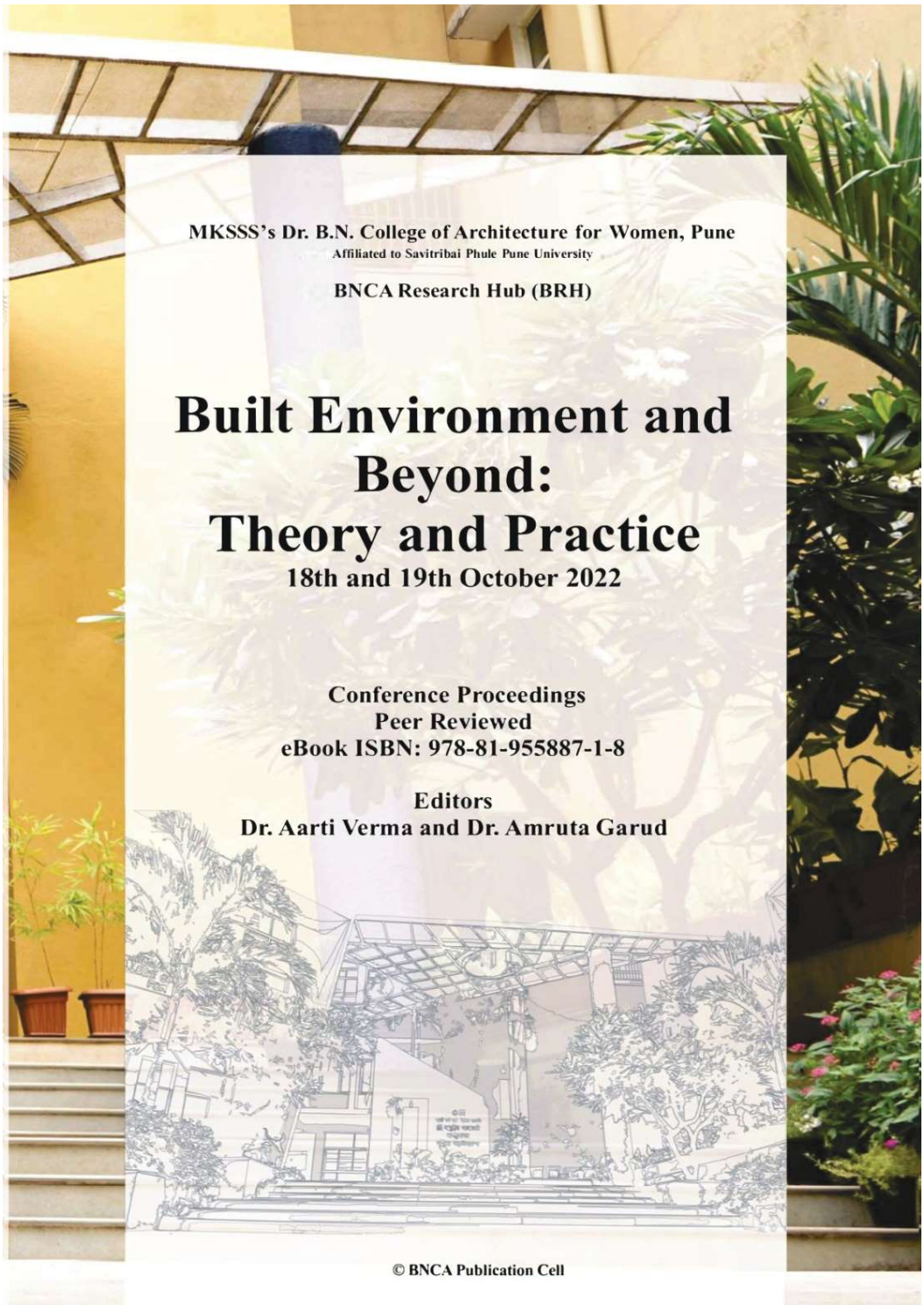

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TRACK 4: ARCHITECTURE AND PLANNING

Impact of commercial gentrification on the community wellbeing in residential areas: Astudy of developing streets of Nashik city

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Pune, India.

Abstract— Nashik city in Maharashtra has come a long way from being the religious center of historic times to one of the fastest growing cities across the globe. Numerous affluent and high-income regions of Nashik are witnessing land use change as a result of urbanization, along with the expansion of commercial activity inside of residential zones. However, this process could have positive and negative impacts on the potential socioeconomic relations in the neighborhoods and on the quality of life of residents. The residential areas are facing commercial gentrification. Any city's urban growth happens in phases, and one crucial phase is the establishment of employment opportunities. Businesses grow and that creates employment possibilities that encourage people to move from rural areas into urban residential neighborhoods, which makes these locations ideal for commercialization. There is a noticeable land use shift from residential to commercial zone. This Commercial gentrification has significant impact on the residents and the quality of life in neighborhood. The significant changes that residential gentrification has brought about in the growth of cities have received a lot of attention in the field of studies. Comparatively, little research has been done on the topic of commercial gentrification and its potential effects.This paper aims to better understand the process of commercial gentrification and its impacts on the residents' quality of life on important streets of Nashik city which are facing this land use shift. To understand the same, methodology followed is- Using primary data collection (Google forms), semi-structured interview and impact ranking, purposeful field survey. The findings show that in the views of local citizens, the long-term disadvantages of commercial gentrification are eclipsed by the immediate and short-term advantages

Keywords— Gentrification; commercial; urbanization; land use shift.

1 Introduction

In the case of Nashik, the city has seen a large increase in population as a result of urbanization during the last few decades. As a result, demand for urban property for residential use has increased. The land use has shifted to mixed-use development. Because of their increased demand and potential for economic gain, affluent neighborhoods of the city, such as Gangapur road, the city's primary road, and roads connected to it, such as college road and pipeline road, have attracted the attention of investors, private developers, and policy-makers, resulting in more land-use change. This process of commercial gentrification in residential areas poses a threat to Nashik's urban management as well as the quality of life of its citizens. The purpose of this article is to examine the process and consequences of commercial gentrification in residential areas in terms of socioeconomic changes, physical changes, and quality life of residents. The aim of this paper is to investigate the effects of commercial gentrification on residents' lives and to assess the feasibility of present urban planning measures in Nashik. The objectives formulated for this research are (1) to study the development of Gangapur road and neighboring areas in last 10 years, (2) to study the impact of gentrification on residents' daily life, and (3)to study the impact of gentrification on a socioeconomic and environmental level.

Faculty: **Ar. Sujata Kodag**

Title of the Paper: **Disaster Risk Reduction Of Smart Cities Through Spatial Planning Perspective- A Case Of Pune**

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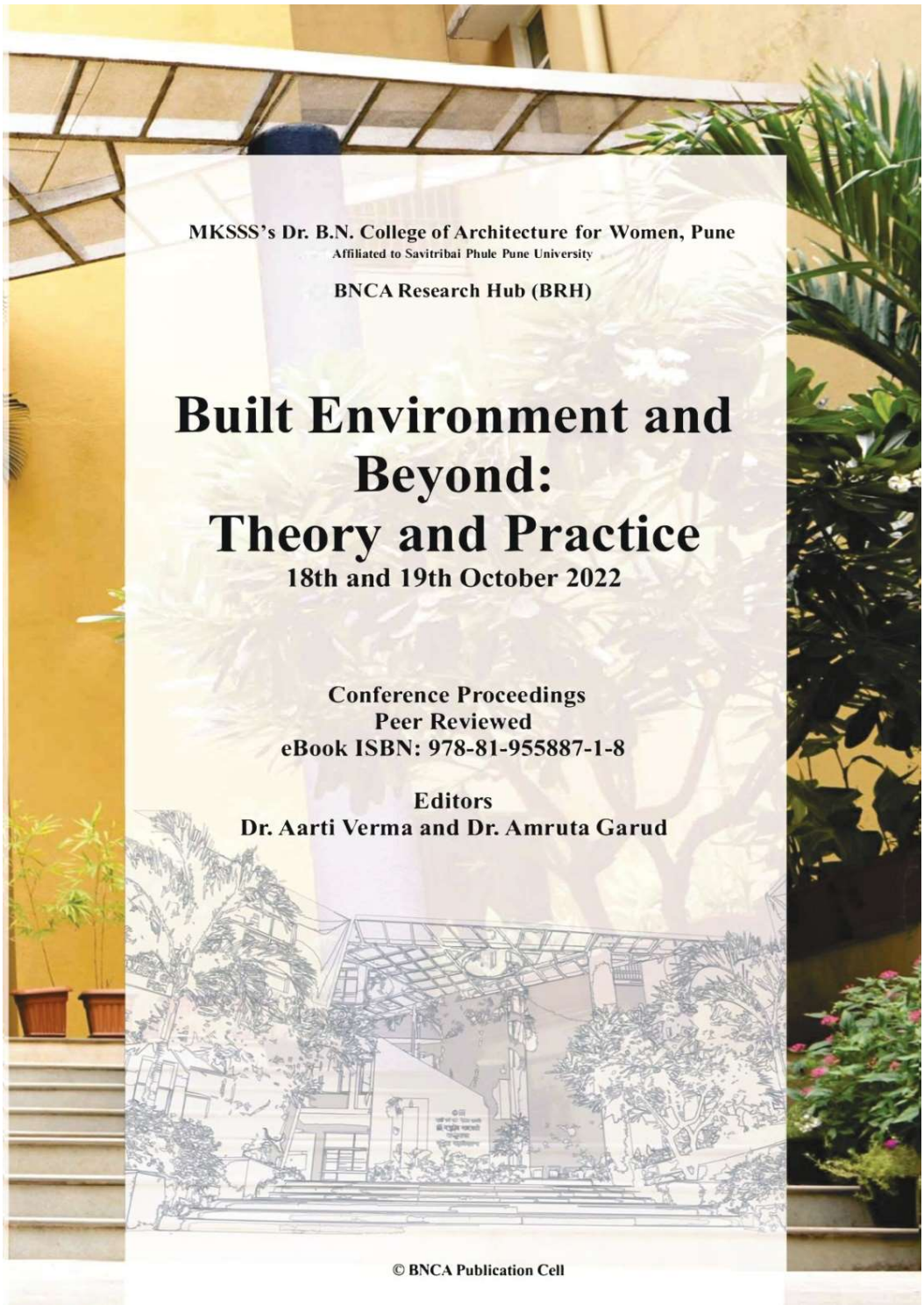

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TRACK 4: ARCHITECTURE AND PLANNING

Disaster Risk Reduction of smart cities through spatial planning perspective- A case of Pune

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Abstract— Cities are powerhouses of development. They attract populations and investments to develop and grow. Cities have to provide to the need of populations in every way from livelihoods to livability. Cities have to update themselves with changing time, technology and situation. An initiative like Smart City Mission, help in catalyzing this process and improve the quality of life and livability of the city. It contributes in disaster risk reduction with its informed decision making system. This paper examines the contribution of smart city initiatives in disaster risk reduction in a spatial planning perspective through questionnaire survey from 500 citizens and structured interviews with key stakeholders. The findings suggest, smart city initiative needs to integrate many aspects of disaster risk reduction and is still in very nascent stage. The study further recommends the need to blend the smart initiatives with spatial planning for disaster risk reduction.

Keywords— Smart Cities, Urban Resilience, Disaster Risk Reduction, Spatial Planning, Urban Risks

1 Introduction

A city is a complex mechanism in itself. Cities are vibrant, diverse and dynamic. They attract populations for livelihoods and livability. With the urban processes working simultaneously, there arises a risk. The risk of hazards is threatening the city directly or indirectly through natural and man-made interventions. This puts the complete purpose of a city in jeopardy as the place which ensures a good standard of living and employment could turn into wasteland entirely or partly in a short period of time in an event of a disaster. Planning of cities therefore is very crucial. The United Nations expects 68% of the total world's population to live in cities by 2050 (United Nations, 2018). This means the cities would be under stress to accommodate the incoming population. This concern is shared globally by planners and hence there are various ideas put forth to better the development policies with respect to planning of cities as well as improving the existing cities. One of the ideas which have been accepted globally is the concept of developing a "Smart City".

The concept of 'Smart City' emerged globally to integrate the technology to make the performance of civic systems efficient and to provide 'ease of doing businesses of day to day working of citizens with administration. Apart from integrating the technology smart city as concept is unclear about its defined role and responsibility (Mohanty S, 2016). The larger framework of smart cities conceptualized cities as places to develop settlements wherein people will earn, work, live and get opportunities to health and educational facilities with the aim of bettering the quality of life (Ojo A et.al., 2014). With this global arrangement of smart cities concept, India in 2015 picked up the concept to launch its 'Smart City Mission'(Making A City Smart, 2021). The aim of the mission was to make cities efficient with an urban renewal and retrofitting program in 100 cities across the country. The responsibility of implementation of the mission is with Union Ministry of Urban Development, Government of India with support from state governments and urban local bodies. The goal of the mission is to adopt sustainable and inclusive development, by developing compact areas to create replicable model for further areas. The Ministry of Urban Development, Government of India proposes an extensive development program indulging various aspects of development of city influencing the spatial planning of the city.

The objective of the study is to understand if the smart city initiatives contribute to risk reduction and what impact they have on disaster risk from a spatial planning perspective.

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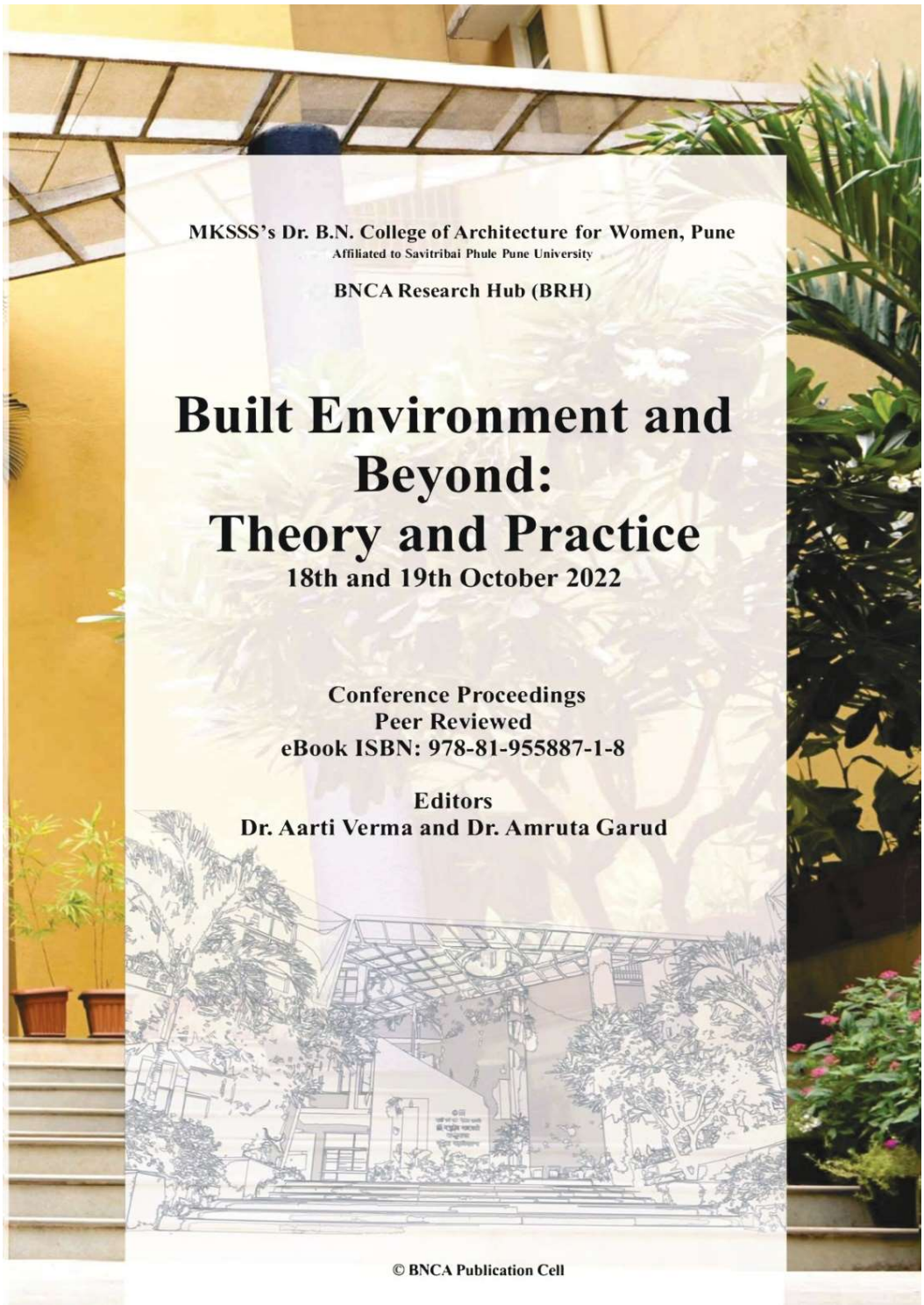

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Evolution of semi-public spaces in a Chawls of Mumbai

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Abstract— Chawls are Mumbai's identity. These are seen as incredible bonding spaces between people living in chawls. It has also showed through some movies and TV shows. Chawls were built to provide affordable housing for mill workers. These were very restricted spaces the evolution of the private spaces and the semi-public spaces have happened very organically. From being designed for only male workers, these spaces now house 5 member families. As the user has evolved, so have the spaces. The Private spaces have become multi-use and the semi-public spaces have spilled to the common spaces. The aim of the research is to understand the development of the semi-public spaces in Chawls of Mumbai. The methodology adopted is a mix of visual analysis as well as interviews to assess current situation as well as the user perception. The unit of study is the Khimji Nagji Chawl, where the lobby and Bogda as semi-public spaces have gone through most changes. Different generations have been using these spaces for various reasons. With the changing lifestyle use of these spaces is also changing as well as decreasing. These semi-open spaces play important role for social interaction between neighbors. This research will help to study these semi-public spaces and to know the reason for decreasing use of these spaces.

Keywords— Mumbai; Chawl housing; Uses of semi-public spaces; Lobby; Generations.

1 Introduction

History

Mumbai, it was also known as Bombay is combination of seven islands. In major part of these islands people used to live in small settlements and earn money from sea. In 1854 industrialization entered in India and Asia's first steam-powered cotton mill opened in Mumbai (Karnik, 2017). This mill was opened by Cowasjee N. Davar. Till 1880 India had 58 mills with 40,000 workers and out of these around 80 % mills were in the cities of Bombay. Talking about Mumbai's architectural style then it's a blend of Gothic, Victorian, Art Deco, Indo-Saracenic and contemporary architectural style. Gateway of India, Crawford market, Chhatrapati Shivaji terminus these are some of Mumbai's iconic landmarks. Another famous thing about Mumbai is its chawl culture. It's a low-cost housing. We can see very unique and characteristic layout in chawl housing. (Hindustan Times, 2017) (Dey, 2018)

Figure 1 – Khimji nagji chawl on map of Mumbai

Figure 2 –Khimji nagji chawl on map of lower parel

Faculty: **Swati Sahasrabudhe**

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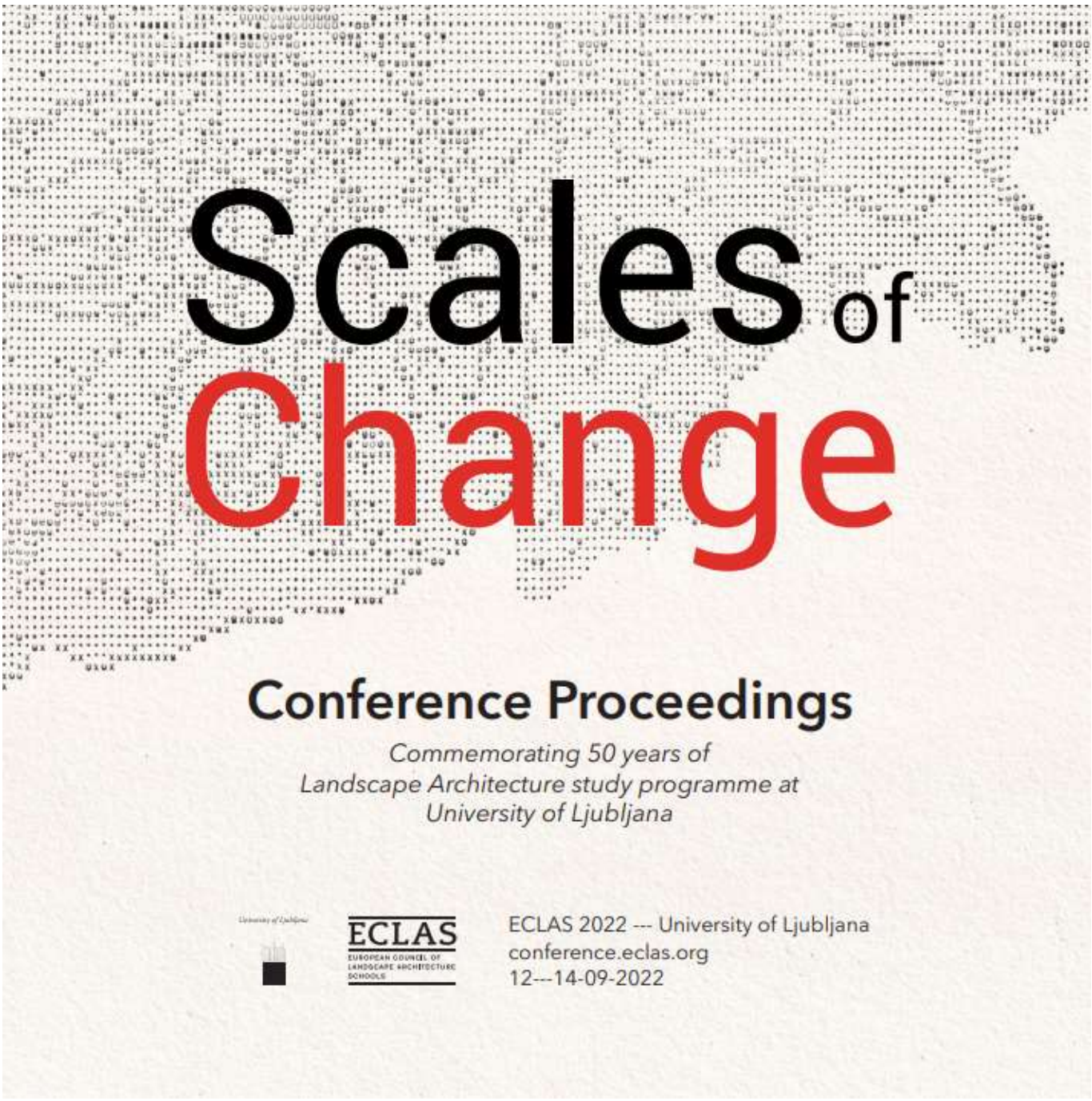

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Merging landscapes' scales: A journey through pedagogical approaches in Landscape Architecture Studios in Indian Context

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Abstract
Landscape Architecture as a discipline in India is over five decades old. The scope of a landscape architect's work is broadly limited to urban contexts and focuses more on designed landscapes, and it poses a great constraint in terms of availability of opportunities in the practice to work across scales of landscapes. These landscape settings at design scale are limited within a boundary of tangible things. Curating and conducting Landscape Architecture studios at post graduate level in India is becoming an increasingly challenging task in the times of political, social, ecological and economic flux. The paper takes an overview of themes selected for the academic studios at Masters level program at BNCA, Pune (State of Maharashtra, India). The paper demonstrates the methodological challenges and opportunities occurring through the journey of 13 to 14 years. The study also reveals how the pedagogical approaches have undergone changes responding to the student-centric and program centric parameters such as the availability of digital tools, exposure to international academia, internal and external contexts, and prevailing issues specific to the place. The study employs interview method and content analysis method to analyse the data from the past and present studio works. The findings reveal the increasing significance of merging the landscape scales, deriving simultaneous and context-specific responses to various scales, and evolving the pedagogical approaches to accommodate not only the scales of change but also the changes in the landscape surrounding us. The dynamics of landscape architecture, the physio-cultural context of State of Maharashtra, India and the challenges of design pedagogy are highlighted in this paper through graphical and textual representation.

Keywords
Merging scales, design pedagogy, dynamics of landscape architecture, physio-cultural context, digital tools

Introduction
Landscape architecture as a discipline involves salient aspects of many allied disciplines such as ecology, art, engineering,

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Architecture as a Catalyst in Mitigating Heat Island Effect

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ABSTRACT

With the increased rate of expansion of urbanization and urban sprawl in the recent years, the environmental issues faced by urban places become ever more concerning. The heat island effect has prejudicious effects on the environment as well as on the dwellers. Urban heat Island effect, which is generally caused due to the replacement of natural land cover with dense concentrations, the research paper will help in understanding whether and how architecture plays a role in mitigating the heat island effect. Architecture has a definite role to play in the mitigation of the urban heat island effect: cities are defined by their buildings and make up a large part of the built environment. The choices that architects and planners make can have a huge impact on the size of a city's urban heat island. (Munro, 2012) Questions of sustainability and environmental consequences pervade most aspects of our lives. In architectural practice, they influence our building regulations and our energy codes. (Thomas, 2015) The research paper is an attempt to review various cases across the world where architecture – both buildings and spaces affect a city's urban heat and also review the factors that help to develop resilient architecture in the context of climate change.

KEYWORDS: *Urban heat island, Architecture, Environment, Climate change, Design strategies*

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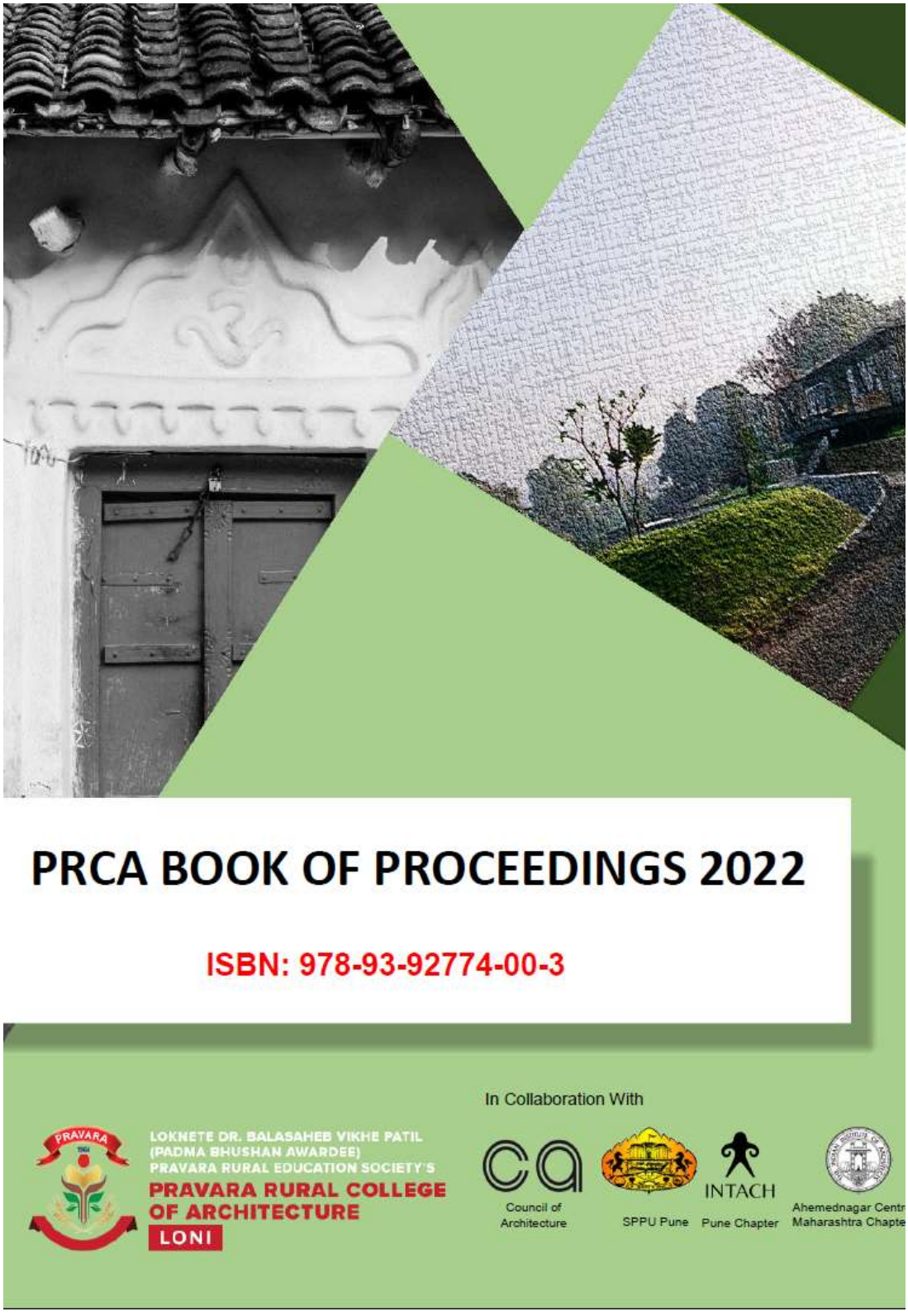

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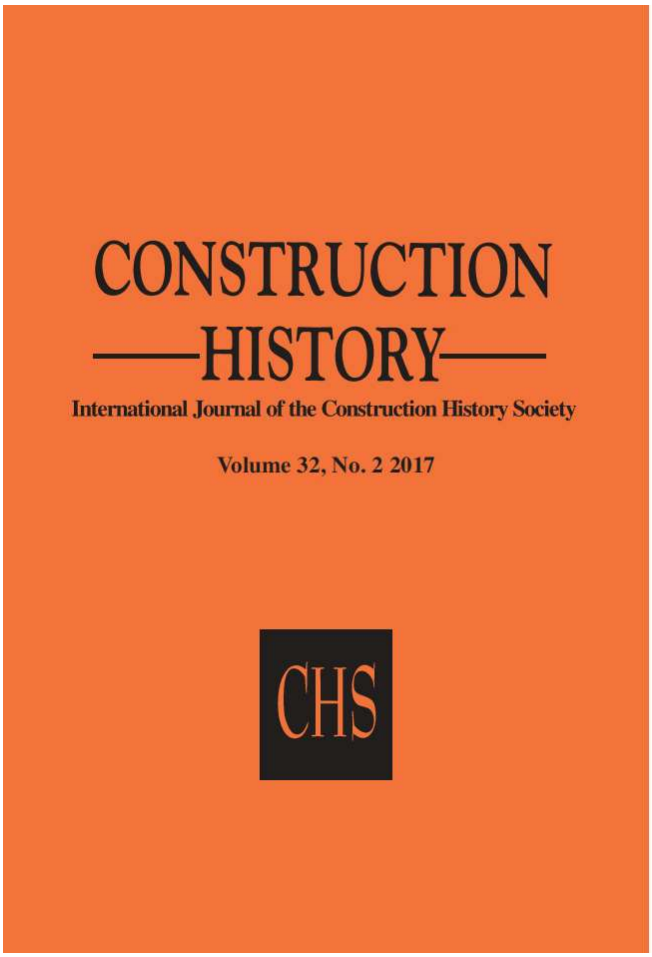

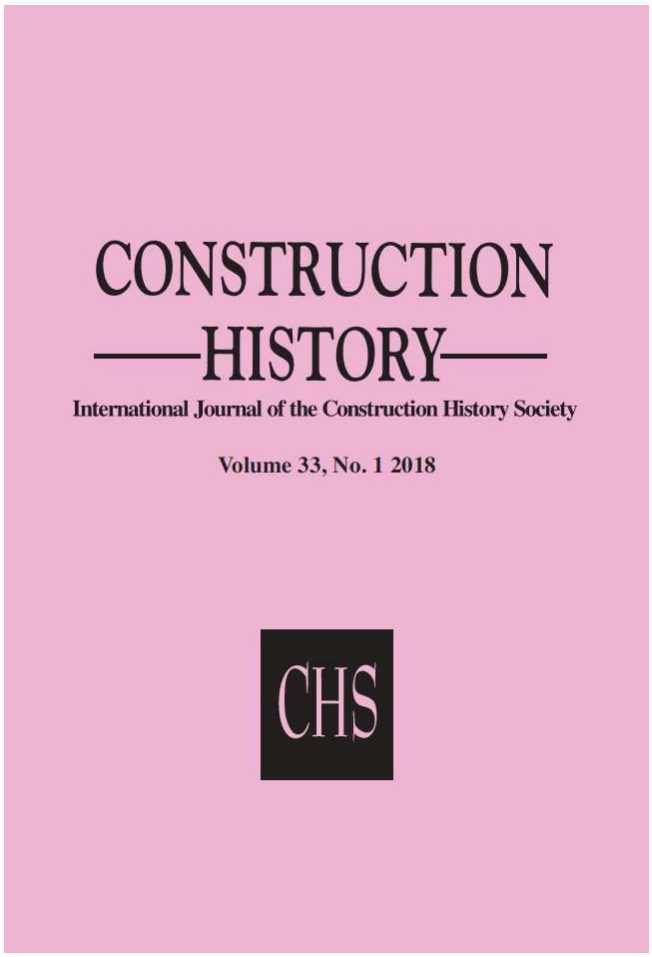

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The Nineteenth Century

Early Twentieth Century

TECHNICAL WRITINGS AS POLITICAL: BUILDING MANUALS AND PATTERN BOOKS FROM BRITISH INDIA (1880-1947)

AUTHORS

Sarah Melsens, Postdoctoral Researcher, Faculty of Design Sciences, University of Antwerp, sarah.melsens@uantwerpen.be
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KEYWORDS

British India, building manuals, pattern books, craftsmanship, nationalism

Abstract

This paper presents an analysis of building manuals and technical texts on construction authored in unofficial capacity by Indian engineers employed in British India's colonial Public Works Department (PWD). These texts were published between 1880 and India's independence in 1947, and thus emerged in parallel to the Indian nationalist movement. The paper aims to explore whether the two phenomena were related and, if so, seeks to reveal the specific nature of relationships between nationalist sentiments and technical writings on construction. In order to do so we examine a number of texts in terms of their intended audience, authors, content, and form, but also investigate the extent to which they borrowed or deviated from the government-published practical handbooks compiled for use in the colonial Public Works Department (eight editions between 1876 and 1931). While the latter were authored in English and have been well known, the former were also published in regional languages and have been largely forgotten.

Introduction

British India's colonial Public Works Department was formally established in 1854 around the time the territory of the East India Company came under Crown rule. It is well-documented and has featured extensively in scholarly research; yet, it is only in the last decades that attempts were made to investigate the role of *Indian* engineers employed in this enormous organisation.[1] Accounts of the careers of legendary Indian PWD engineers such as Muncher Cowasji Murzban (1839-1917) and Ganga Ram (1851-1927) recently featured in English scholarship, and illustrate that by the end of the nineteenth century, certain Indian engineers were able to rise to posts where they could become 'intentional actors' who used their position not only to serve the British Raj but also their own community's interests (Fig. 1).[2] Indeed, Murzban and Ram designed or organised the construction of some of the most prominent public buildings in colonial Bombay and Lahore and were even bestowed with imperial titles after their successful provision of temporary infrastructure for the royal visit of Prince Albert to Bombay (Murzban, in 1890), and for the Delhi Durbar (Ganga Ram for the 1903 durbar). But in their nonofficial capacity, they also offered design-and-build services to Indian elites and financed welfare and educational projects for their own Parsee and Sikh communities. Far from being passive functionaries of the colonial regime, Indian engineers, thus, much like contemporary Indian mercantile elites and those engaged in upcoming

Faculty: **Sayali Andhare, Namrata Dhamankar**
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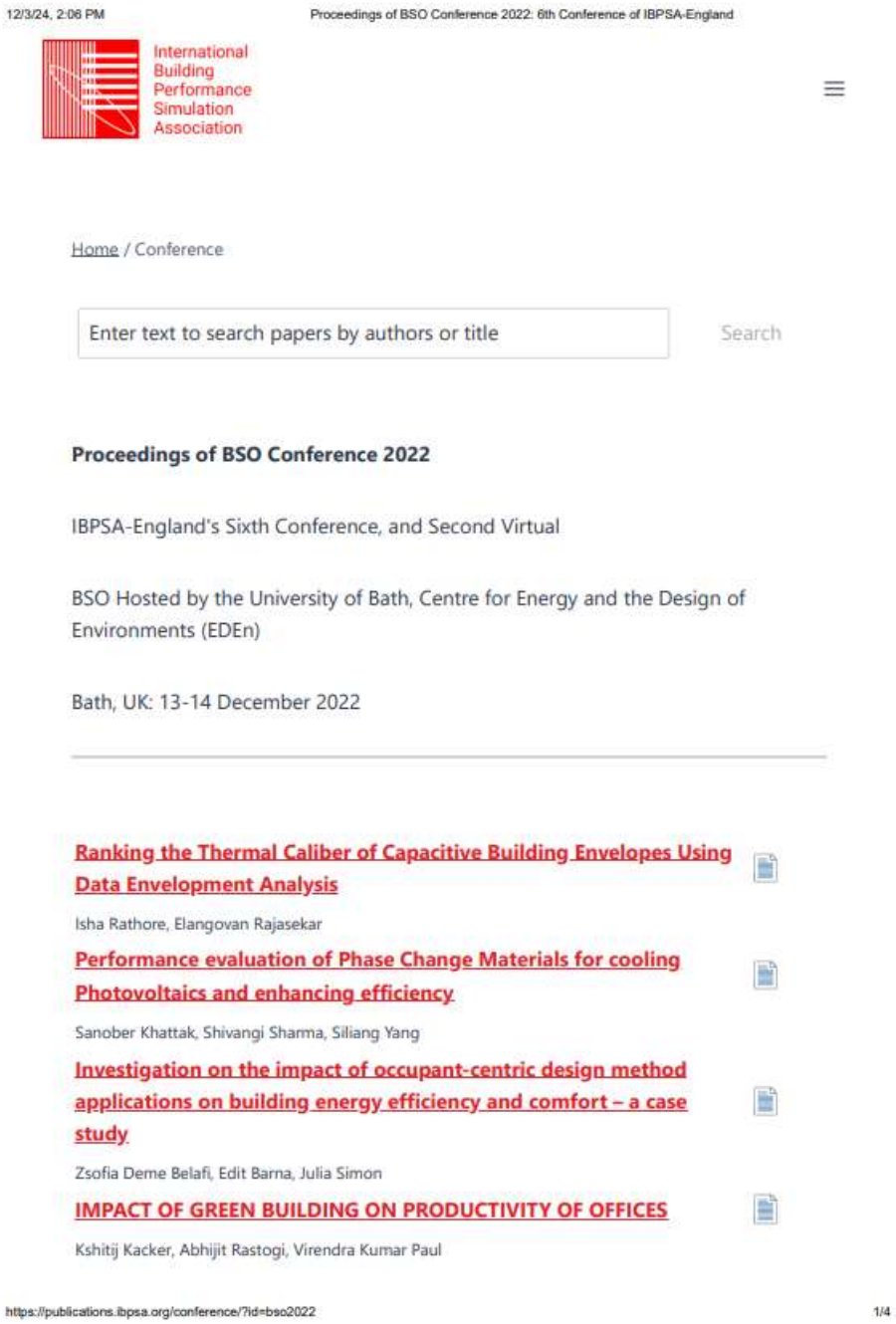

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Evaluating indoor environmental quality of onsite construction workers housing in Pune, India through performance-based simulation

Sayali Andhare[1], Namrata Dhamankar[2]
[1]Dr. B. N. College of Architecture, [1]Pune, [1]India
[2]Dr. B. N. College of Architecture, [1]Pune, [1]India

Abstract

Construction workers are the city's most essential service providers, but their contribution to the urban economy is frequently overlooked. Most construction workers are migrants, and the primary reason for their migration is to find suitable job opportunities and an improved living standard. Whether the growth of the infrastructure sector raises the standard of life of migrant workers is a matter of concern since these migrant workers frequently relocate every few years to other places living in temporary constructions near or on the job site provided by the owner or a contractor. This research examines the indoor environmental quality of onsite housing for construction workers. It presents a part of the ongoing research assessing the parameters that impact the onsite housing system for construction workers in terms of building materials, services provided, and indoor environmental comfort. Simulation studies were carried out to analyse the annual performance. In addition, the performance of various materials was evaluated along with daylight and ventilation analysis throughout the year. The research's main findings are that onsite workers living in a modular prefabricated system can achieve indoor environmental comfort by using a wall panelling system made of paper honeycomb sandwiched between powder-coated G.I. sheets can provide thermal comfort with additional aluminium bubble wrap insulation for the roof. Eco coolers, a passive cooling system, are also used to improve the ventilation inside the unit. This system provides thermal insulation while also being affordable and scalable for the temporary housing category.

Key Innovations

- Modular System for onsite construction housing
- Practical implications
- Wall Panelling System for Thermal Insulation and Better indoor Quality
- Use of eco cooler for indoor comfort

Research Implications

This research has contributed to creating an onsite housing system for construction employees that is comfortable to stay in. The onsite live scale prototype building and testing for indoor environmental parameters and user feedback will help create a statement of assurance of the workability of the structure and the intangible benefit to the users. The findings are relevant to developing countries where construction workers are important development stakeholders. Along with construction workers, it will assist builders and developers in providing housing for workers that meets the necessary health and safety criteria.

Introduction

A Construction worker who is the most integral part of the construction sector is most vulnerable and often gets neglected. We have seen significant development in the architectural world, from tiny shacks to high-rise buildings; however, the living conditions of onsite construction workers (migrant workers) have not seen the necessary change and evolution. (Shamindra Nath Roy, 2017). In addition to minimum wages, overtime pay, and weekly offs, migrant construction workers should be provided with comfortable housing and other social security benefits such as creches for their children and proper sanitation facilities under labour laws. (The building and other construction workers act, 1996) As a result, it is the developers' responsibility to ensure that the working conditions for their construction workers meet some basic standards. Since the worker's stay is temporary and construction site locations repeatedly change, developers end up providing these workers with temporary shelters. Such shelters are without basic facilities and, in turn, jeopardize their comfort as construction companies do not directly profit financially from the construction of permanent housing for workers. (Srivastav Ravi, 2016) Human's psychological and physiological well-being is impacted by indoor comfort. The indoor comfort favours well-being, productivity, and health, which is why it should be included in the housing for everyone. (Khan, 2017) Developers should offer this personnel adequate, thermally pleasant housing for onsite construction workers as they are the backbone of this industry. (Shamindra Nath Roy, 2017).

An approach was developed that combines interviews, case studies, observations, and content analysis. In addition, a customer satisfaction survey was also carried out. Gaining a thorough grasp of the housing options and user comfort for worksite workers is the main objective of data collecting through a survey. It was done through interviews with developers and construction employees. The existing literature has provided an understanding of indoor air quality issues and how simulation can be utilized to analyse the current situation and assist in designing an environmentally friendly residential unit for onsite construction workers. The importance of indoor

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Gentrification Induced Streetscape Changes

Case Study: Jangali Maharaj Road ,Pune

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Dr.Vasudha Gokhale
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Abstract— **Most of the Indian cities, have extended their limits and have grown beyond. Urban lives are changing, mutating, and getting transformed and thus giving rise to a new socio- economic and spatial order that is changing the culture and the character of established urban centers. This process is often coupled with gentrification. The concept of gentrification has been extensively used in context of neighborhood renewal process. The exact meaning of the term and its parameters and indicators has always been a subject of debate. India is undergoing a major transit phase of urbanization. A sense of continuity that existed in the earlier urban center's is influenced by the private capital. This results in the physical manifestation through new built forms, new materials and new way of life that sees changes in socio -spatial organization of urban areas and its inhabitants. India did not undergo renewal of its cities entirely afresh and hence the development has been progressive. This has steadily resulted in gentrifying cityscapes and restructuring of its buildings with new facades and changes in architectural character and building use representing Gentrification. This research examines the changes in the pattern of land use and character of streetscape that has given rise to a new architectural form defining the street character in the city of Pune with Jangali Maharaj Road as a case. It analyses the changes in the built environment due to physical and social upgrading that has a big influence on the architectural character of the place. The analysis is aimed to present a nuanced picture of gentrification phenomenon on streetscape in Indian cities for architects, planners, and policy makers to facilitate them to address this issue in future urban development endeavors.**

Keywords—Streetscape; cityscape; ,gentrification; landuse pattern; built environment; Pune

I. INTRODUCTION

Urban studies primarily concentrate on the changing composition of the city and its streetscape, and many times it overlooks the underlying process in their narratives. India, like many other countries, is rapidly urbanizing. Urbanization plays a vital role in changing the streetscapes of the cities. Urbanization brings out social and cultural changes in community life, symbolizing modernization [1]. Streets connect people with their built environment and are an essential aspect of people's response to the surroundings [2]. The street creates a link between buildings. The streetscape consists of a street and compound walls, building facades including cladding material, architectural elements, trees, etc. The streets become a domain of a local community and add to the character of the place [3]. Streetscape and cityscapes together make the character of the area. Urban lives are changing, mutating, and transforming, thus giving rise to a new socioeconomic and spatial order changing the culture and character of established urban centers. Urban regeneration, urban renewal, urban revitalization are some of the processes that lead to urban growth. The phenomena that lead to the metamorphosis of the urban areas, is referred to as gentrification. It is essential to distinguish between gentrification, urban renewal, and urbanization. Although very similar and sometimes used interchangeably, they are different concepts with different impacts [4].

II. GENTRIFICATION

A. Concept and process of Gentrification

Ruth Glass, an urban sociologist, introduced the term "gentrification" in Britain in 1964. She referred to both physical improvement and social change in housing and housing ownership [5] [6]. Gentrification also refers to the influx of private-market investment capital into major urban areas. This aspect was more immediately visible in the architectural restoration of ancient buildings and the clustering of new cultural amenities in the urban center. It is because of a shift in corporate investment and a matching increase in the urban service sector. Gentrification was originally characterized as a process of neighborhood change that causes a spatial reshuffling among communities and metropolitan areas on various levels [7]. The concept involves the replacement of land users with those of higher socioeconomic status, which also involves changes in the built environment through a process of transforming a vacant area or a locality into an upgraded residential or commercial area for an upper-income group by replacement of land users. In her study of gentrification in Canada, Helene Belanger finds that there are tensions between long-time residents and newer ones about lifestyle choices and the model of development of the neighborhood [8]. The definition of gentrification has evolved, moving away from Ruth Glass's classic definition [9].

Faculty: **Dr. Avanti Bambawale, Dr. Anurag Kashyap and Dr. Avinash Gaikwad**

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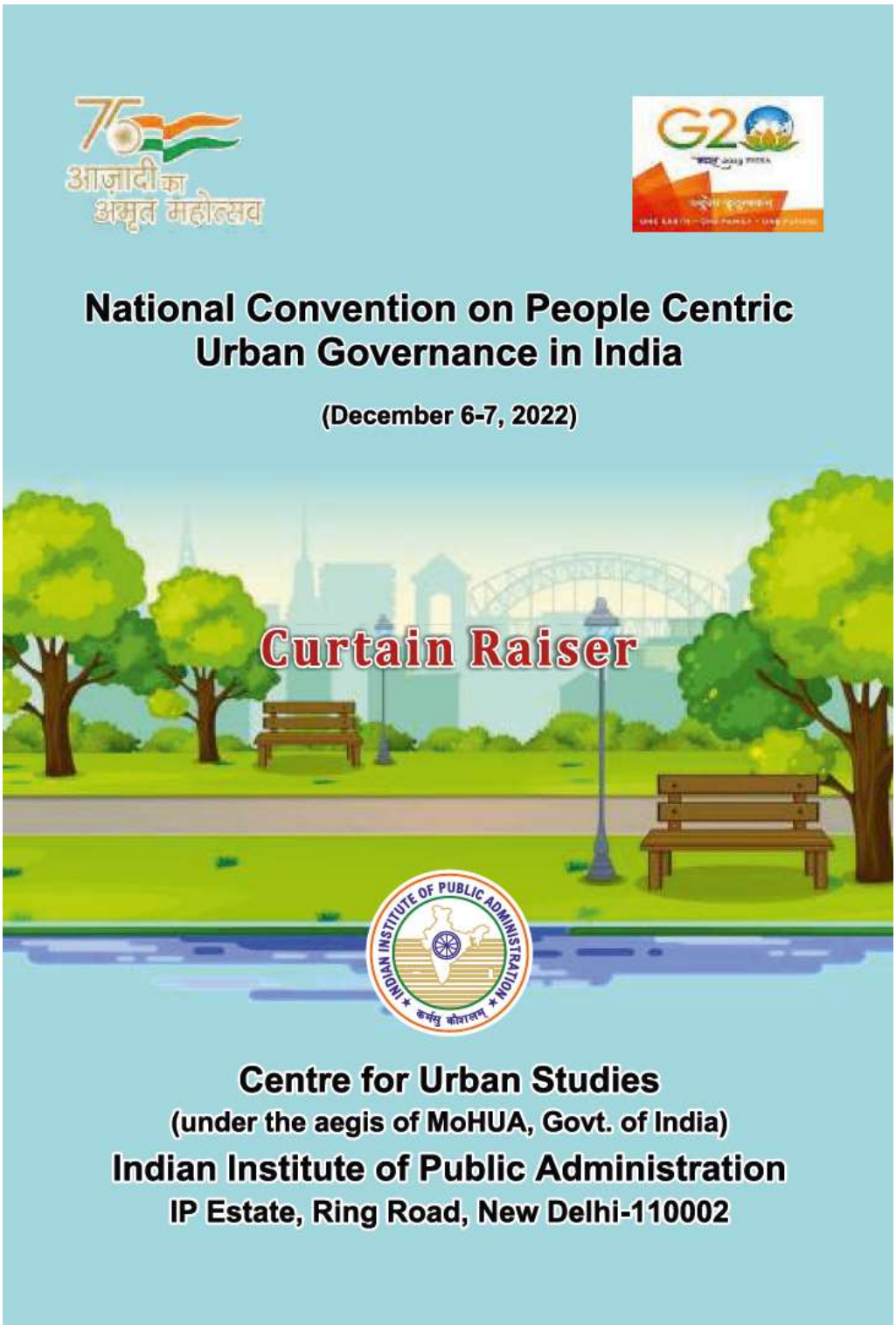

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III-A: Smart City (Venue: Sarthak Hall, First Floor) **Chairperson:** Prof. Tathagata Chatterji, XIM University Bhubaneswar, Odisha	**III-B: Urban Infrastructure and Mobility** (Venue: Sparsh Hall, First Floor) **Chairperson:** Shri Palash Srivastava, Deputy CEO, IIFC
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7. Urban Sustainable Development and Solidarity Transforms Jaipur City into a Smart City (Rashmi Singh* And Dr. Poonam Sharma)	7. An Assessment of Common Service Centres in Selected Villages in Bihar (Yash Kumar* and Dr. Anju Helen Bara)
Break Away/Parallel Session-IV (Date: 07.12.2022; Time: 1145-1315)	
IV-A: Waste Management (Venue: Sarthak Hall, First Floor) **Chairperson:** Dr. Kulwant Singh, CEO, 3R Foundation	**IV-B: Urban Planning & Land Management** (Venue: Sparsh Hall, First Floor) **Chairperson:** Dr. D.S. Meshram, President, ITPI
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2. Faecal Sludge and Septage Management in India (Dr. A.K. Gupta)	2. Land Management for Sustainable Development (Prof. V.K. Dhar)
3. Informal Sector and Waste Management (Shri Prabal Bhardwaj)	3. Developing Sidewalk Assessment Tool: Towards Evaluation of Pedestrian Environment in Urban Areas (Dr. Avanti Bambawale)
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which are largely self financing, and which serve the needs of the urban poor. This study also provides a formula for public-private partnership in land development and housing in Delhi, and defines the facilitative role to be played by the Delhi Development Authority (DDA). The model format can be suitably modified and applied in other sectors on the basis of experience gained during the project implementation and execution.

Keywords: Urban Development, Urban Paradigm, Public-Private Partnership, Delhi Development Authority

DEVELOPING SIDEWALK ASSESSMENT TOOL: TOWARDS EVALUATION OF PEDESTRIAN ENVIRONMENT IN URBAN AREAS

Dr. Avanti Bambawale*, Dr. Anurag Kashyap and Dr. Avinash Gaikwad
*Professor

Abstract: Streets are one of important means of transportation where sidewalks are one of their integral parts of which pedestrians' are prime users. Walking is a basic and indispensable mode of transport for pedestrians. Creating pedestrian conducive sidewalk spaces and satisfying pedestrians' needs is the prime objective of sidewalk environment. To plan for qualitative environment for pedestrians, existing sidewalk situations needs to be assessed. In western countries several tools and models are developed for evaluation of sidewalks. However most of these tools have neglected the importance of considering pedestrians' perception in assessing Pedestrian Level of Service (PLOS) of sidewalks. A more accurate and sensitive tool would incorporate and account for the planning or improving of existing pedestrian environments in any city. The aim is to develop sidewalk assessment tool for evaluation of existing sidewalk environment from level of pedestrians' satisfaction. This tool will help the municipal authorities to identify the sidewalk attributes that need to be measured, how to measure these attributes and, finally, incorporating them into an appropriate assessment framework. The proposed tool is tested on 9 streets of Pune city having varying sidewalk widths and fall under the mixed land uses- mainly commercial and residential. It specifies 20 sidewalk attributes that cater to pedestrians' satisfaction needs. The result of the study is interpreted in terms of Pedestrian Satisfaction Index defining PLOS and it contributes in identifying shortcomings of sidewalk attributes from pedestrian's perspective. This tool can be universally applied irrespective of city context and it facilitates pedestrians to convey city planners and municipal authorities about their needs and expectations towards sidewalk elements and thus demand for improving existing sidewalks in city.

Faculty: **Mrunalini V. Patil and Dr. Avanti Bambawale**
Title of the Paper: **Evaluation of usability of public parks in satara city (w.R.T. Inclusive design)**
Name of the Journal/Proceedings: PCRA Book of Proceedings 2022
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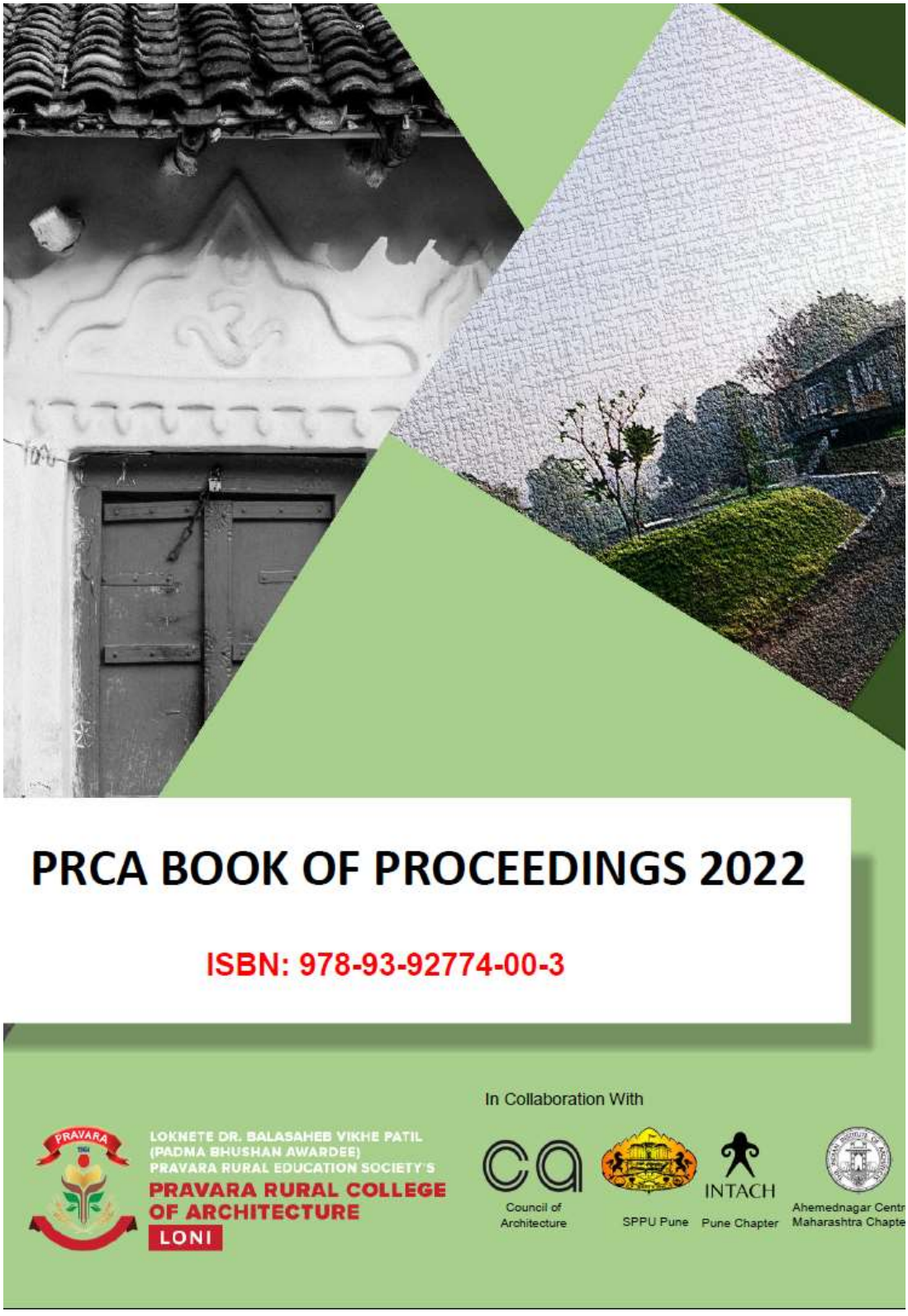

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EVALUATION OF USABILITY OF PUBLIC PARKS IN SATARA CITY (W.R.T. INCLUSIVE DESIGN), DIST – SATARA, MAHARASHTRA.

Ar. Mrunalini V. Patil[1], Dr. Avanti Bambawale[2]
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Abstract: Historically the main purpose of public urban parks is to provide large open spaces within a city that can help mitigate the negative effects of industrialization. Recently, most developed countries of the world have recognized the importance of inclusive design of public parks for both environmental and social sustainability. These include increasing community resilience by shaping people's perceptions of positive health outcomes, social welfare and social relationships, trust, welcome and safety. Therefore, it is imperative to ensure that public parks are inclusive. "Inclusive" means "space for all" which suggests that everyone should be greeted in space regardless of gender, age, sexuality, race, ethnicity, religion, cultural background, socio-economic status or personal values. However, there are many public parks that already exist in developing cities but suffer from abandonment or underuse due to their un-inclusive planning with respect to physical, mental and social needs and preferences of citizens. The purpose of the study is to evaluate the elements required to improve the park usability through inclusive design and to analyze the factors affecting park usability and its inclusiveness with case examples of four public parks of Satara city, Maharashtra. Primary data is collected through field observations and behavioral mappings and interview survey. 120 samples of different age group, gender, and social background and income groups have been collected.

Finally, the research identifies the opportunities and challenges for inclusive design of public parks in Satara city. Finally, the paper reflects on the generality of the overall design that must be taken into account and considered when designing successful public parks.

Keywords: Public Parks, Usability, Inclusive, Visitors.

1. Introduction

1.1 Study Area:

Satara city from Maharashtra, India is a historical city currently at acceleration stage of the process of urbanization. The city was founded in the 16th century and was the seat of the Chhatrapati of Maratha Empire; Shahu I. Satara city is located in the Satara District of Maharashtra state of India, near the confluence of the river Krishna and its tributary, the Venna. The city gets its name from the seven forts (Sat-Tara) which are around the city. The town is situated near Pune-Bangalore, Diversion National Highway No.4 and lies between latitudes $17^0 54'$ to $18^0 11'$ N and longitudes of $75^0 3'$ to $74^0 54'$ E with an altitude of 697 m above mean sea level. Satara city is located in the bowl like enclosure formed by Ajinkya Tara fort on south joined by Yawteshwar hills in South-west. Important historical places like Pratapgad and Sajjangad are also near to Satara city. World famous hill stations like Mahabaleshwar and Pachgani are within reach of two hours from Satara city. Satara city is also well connected with important towns and cities of Maharashtra by Road and Rail. Satara city also serves as political, economic, social and industrial and educational hub of the entire district (Ankush Barkade, 2011). Hence, it is mushrooming as one of the developing cities.

Though Satara has blessed with many natural green spaces, heritage sites and historical places in and around city, they are out of reach of citizens considering time, expenditure and transport medium in day-to-day life. Therefore, the public parks in city play an important role in fulfilling physical, psychological and social needs of citizens

Faculty: **Ar. Swati Kashyap, Ar. Geeta Nagarkar.**
Title of the Paper: **"Analysis of Chhari Dhand wetland and Banni Grassland, Bhuj, Gujrat and its impact on local Communities."**
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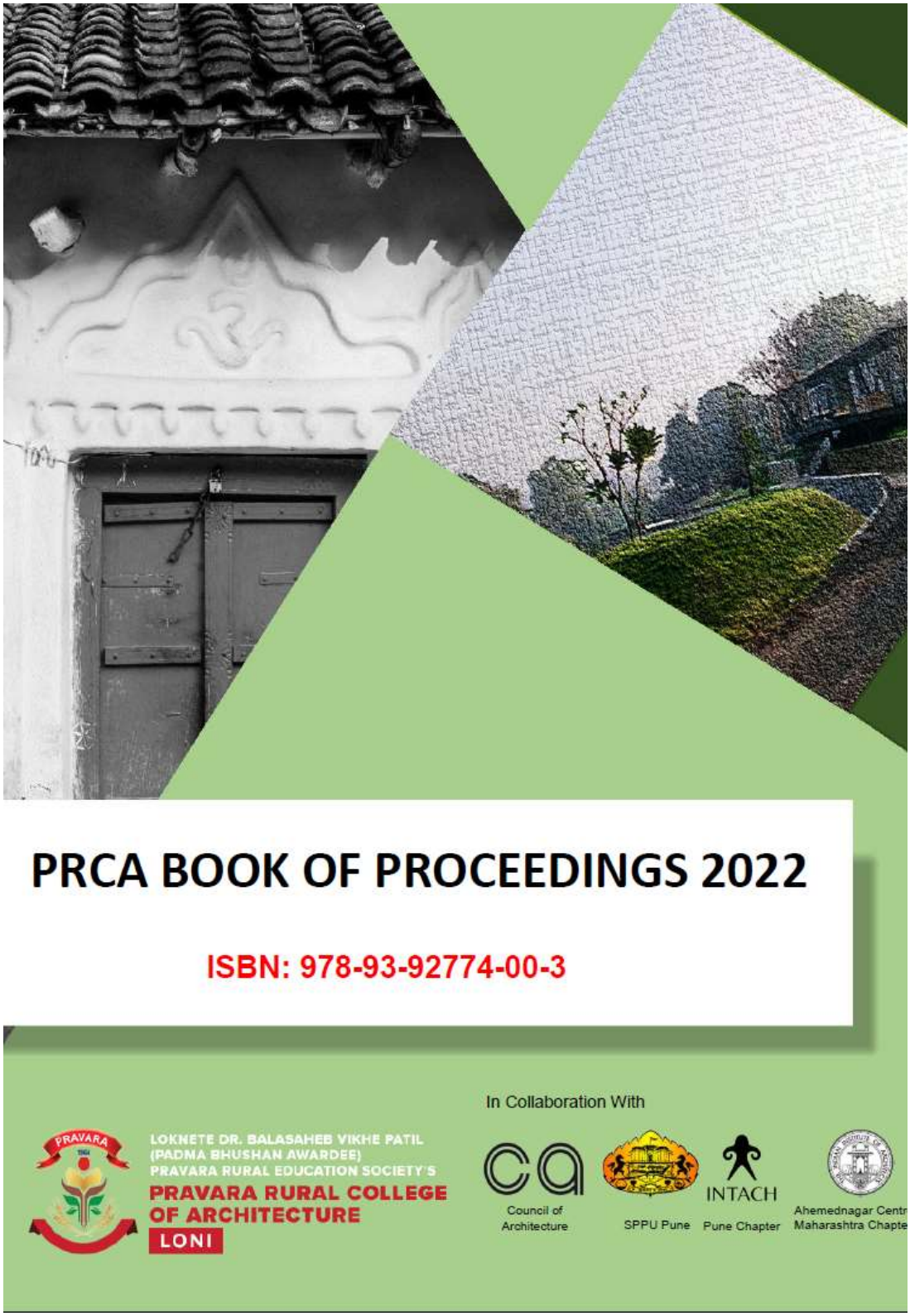

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Analysis of Chhari Dhand wetland and Banni Grassland, Bhuj, Gujrat and its impact on local communities.

Ar. Geeta Nagarkar[1], Ar. Swati Kashyap[2]

Assistant Professor, Dr.BNCA, Pune

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Abstract

The Banni grassland in Gujarat's Kachchh district is one of the largest grasslands in the Indian subcontinent. The area is flat with an altitude of 3-5m above MSL with high salinity. It is a region that is both socio-culturally unique and ecologically valuable. Ecologically the Banni is a "unique" grassland ecosystem because large parts of it are "inherently saline". It hosts rare grass species which support many endemic and endangered species and thousands of migratory birds. It has been home to more than 20 ethnic semi-nomadic communities.

Domestic animals like cows, buffaloes, goats, sheep and camels as well as wild herbivore thrive on these rare grass species. For four centuries Maldharis have been practising pastoralism (breeding cattle, buffaloes, goats, sheep and camels) and trading livestock not only all over India but outside India also.

Chhari Dhand is the largest natural salty wetland in Banni and is a Ramsar site. This is a seasonal desert wetland and only gets swampy during a good monsoon, receiving water from the north flowing rivers as well as from the huge catchment areas of many surrounding big hills. Chhari-Dhand is a Bird sanctuary. Nearly two lakh birds which are migratory and endangered, flock into the area in thousands during monsoon and winters.

Due to damming of rivers, frequent droughts, invasive species, climate change these areas are under constant degradation. Causes of degradation are natural as well as anthropogenic.

The aim of paper is to analyse the changing trends causing degradation vis-à-vis the earlier status of this area and its impact on the local community. It also aims to propose guidelines for restoration and prevention of further degradation, based on similar case studies carried out elsewhere.

Keywords: Grassland, wetland, Local communities, Degradation.

Faculty: **Neha Joshi and Pradnya Patki**
Title of the Paper: **Roadmap for strengthening Rural Development: A Case of Ribandar, Goa**
Name of the Journal/Proceedings: Virtual National Conference on Rural Architecture and Regional Planning
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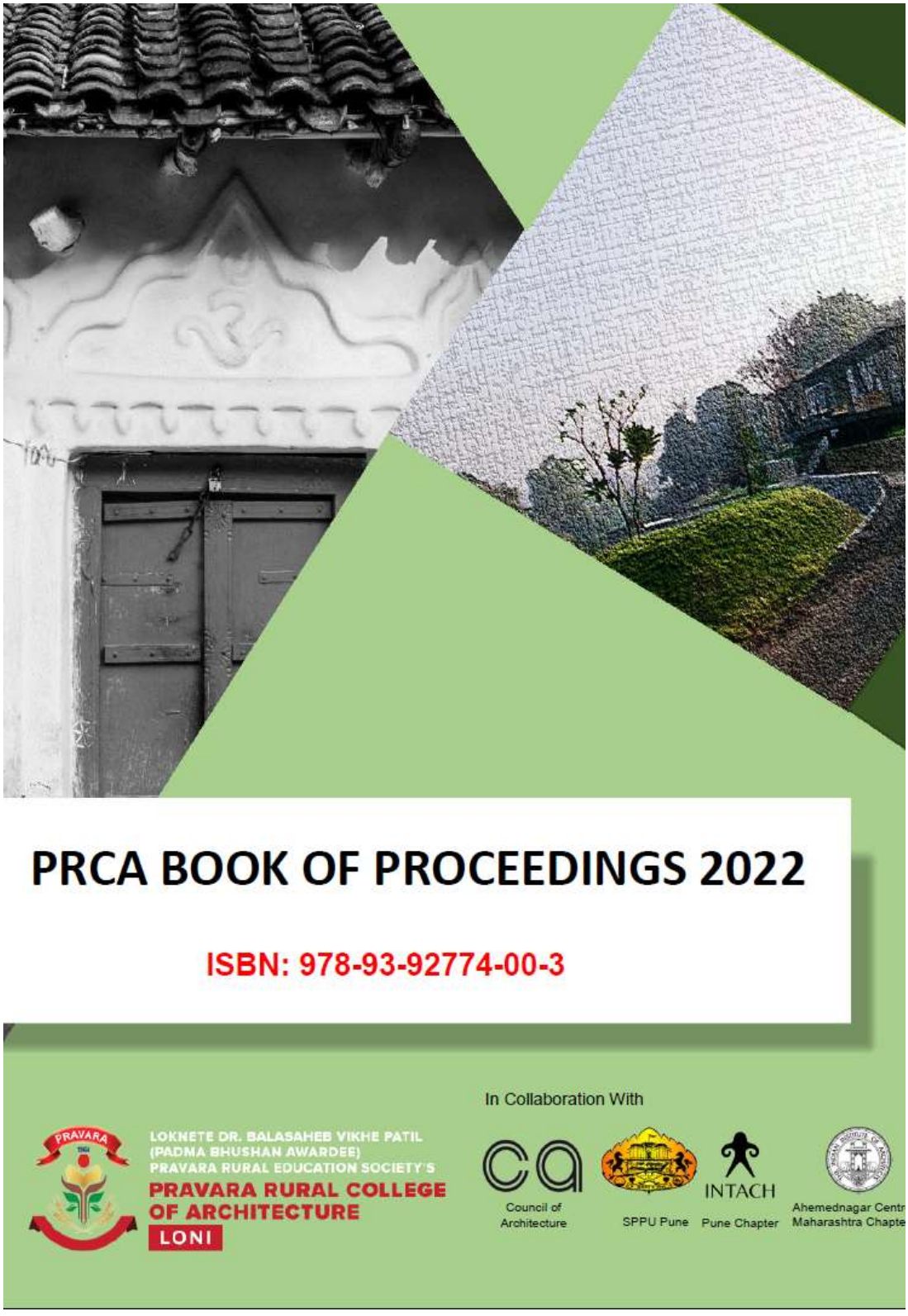

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Roadmap for strengthening Rural Development:

A Case of Ribandar, Goa.

Prof. Pradnya Patki[1], Prof. Neha Joshi[2]

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Abstract: Cities are encroaching on the fringe agricultural lands leading to environmental degradation and hampering rural lifestyle. Cities and villages are organic in nature, multilayered in culture, social pattern, and economy. Each place echoes the essence it holds as it has passed over ages. The social and physiological needsof the people are ever changing.The major cities random development is affecting its multi - ethnic culture. People's adaptation to these spaces and the resulting lifestyle, has been evolving through the decades. But all this change is not balanced especially with respect to rural and urban areas. More attention is being given to urban development than rural and hence the out migration is strongly seen. Many policies are being made but better implementation is required. It is critical that each rural areas' uniqueness is identified and implementation is done. Studying these changing needs and developing alternative models of development of villages is the aim of the paper.The objectives are to do resource profiling, understanding urban rural linkages, field observation and live case study, and developing policies. The methodology employed for this study is case study of Ribandar Village in Goa, which is adopted after through primary data collection of the existing concerns. The characteristic of rural-urban coexistence defining the urban and the rural better ensure lesser environmental burdens and sustained growth across regions will be a solution for exploring the rural-urban linkages for alternative models of sustainable growth and development.

Keywords:environmental degradation, social needs, lifestyle, migration, alternative models, sustainable.

1. Introduction :

Urbanisation is rapidly growing with city centres getting crowded. There is burden on the infrastructure, services and goods. They are acting as magnets where self-economic development is assured. Hence leading to migration from the town centres to cities.

From the Census of India 2011, the definition of urban area is as follows; 1. All places with a municipality, corporation, cantonment board or notified town area committee, etc. 2. All other places which satisfied the following criteria: i) A minimum population of 5,000; ii) At least 75 per cent of the male main working population engaged in non-agricultural pursuits; and iii) A density of population of at least 400 persons per sq. Km. A geographical area that is situated on the outskirts of towns and people are engaged in Primary industry is reffered to as Rural Area. Primary is considered here as production of any product for the first time in co-orperation with nature.(Banakar & S.V.Patil, 2018)With Respect to migration as per Census 2001 shows that the total number of migrants has been 314 million. Two reasons namely push and pull factors influence this migration. Push factors are poverty, unemployment and natural calamity, at the same time, better opportunity, better salaries , relatives or friends stay since long time are the indicators of pull factors.(Sali & Shanta.B.Astige, 2015) A study done by economic and social commission for Asia and the Pacific (ESCAP, 1991) observed that "migration from rural to urban areas continues at a rapid pace in many countries of the

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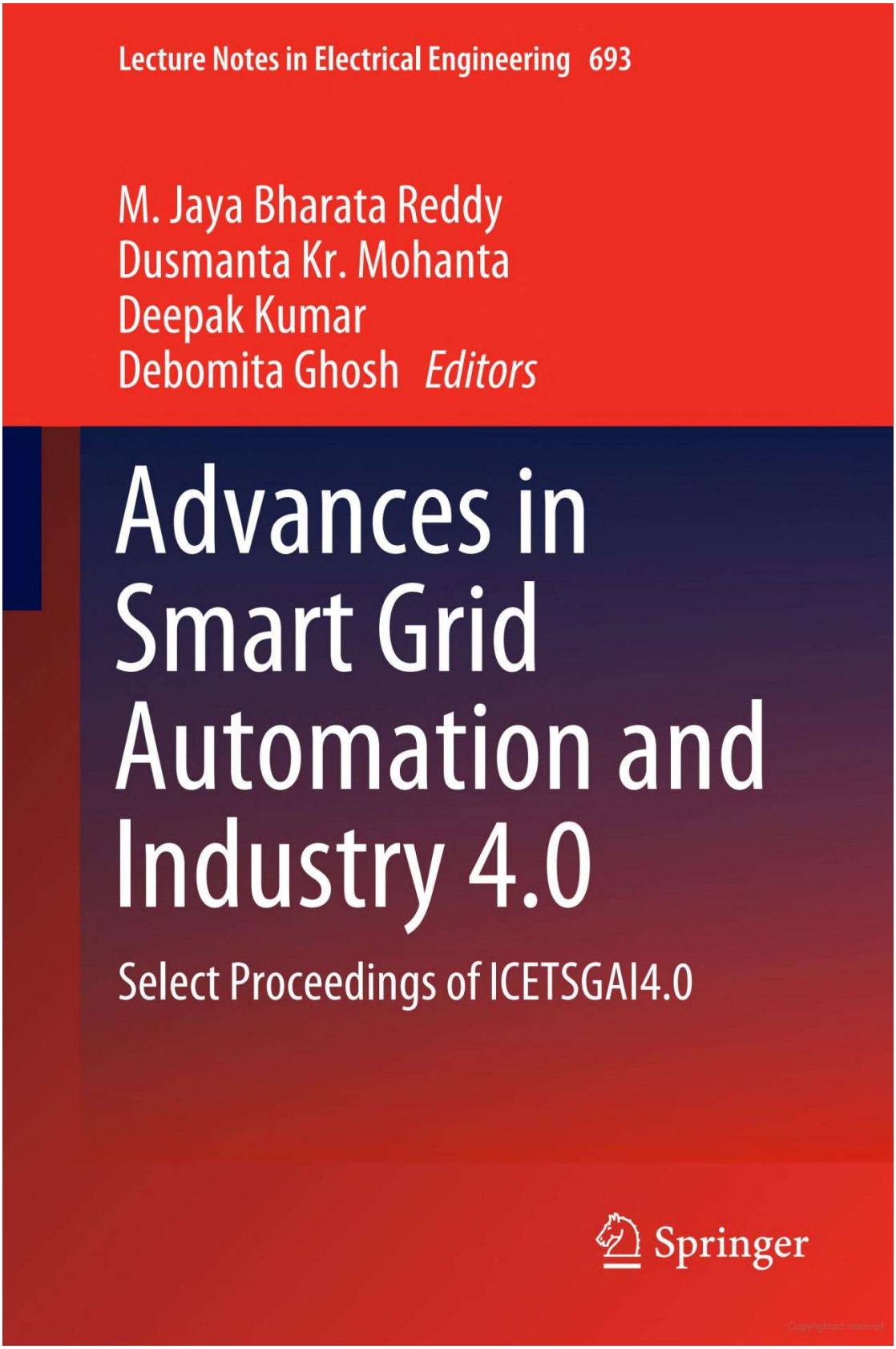

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Advances in Smart Grid Automation and Industry 4.0

Om Prakash, Ankish Aman, Saurabh Ranjan & Namrata Dhamankar

Part of the book series: Lecture Notes in Electrical Engineering ((LNEE,volume 693))

Abstract

Many corporate offices and industries in India are endeavouring to make their campuses progressively sustainable. Their maintainability attempt usually incorporates expanding energy efficiency of new and existing structures. There are a few buildings and equipment incorporating energy efficiency, using energy modelling technique to make them energy efficient. While energy models are broadly utilized during the design of the building system and its equipment. Further energy conservation method (ECM) is proposed to enhance building energy efficiency. The paper deals with a contextual investigation,

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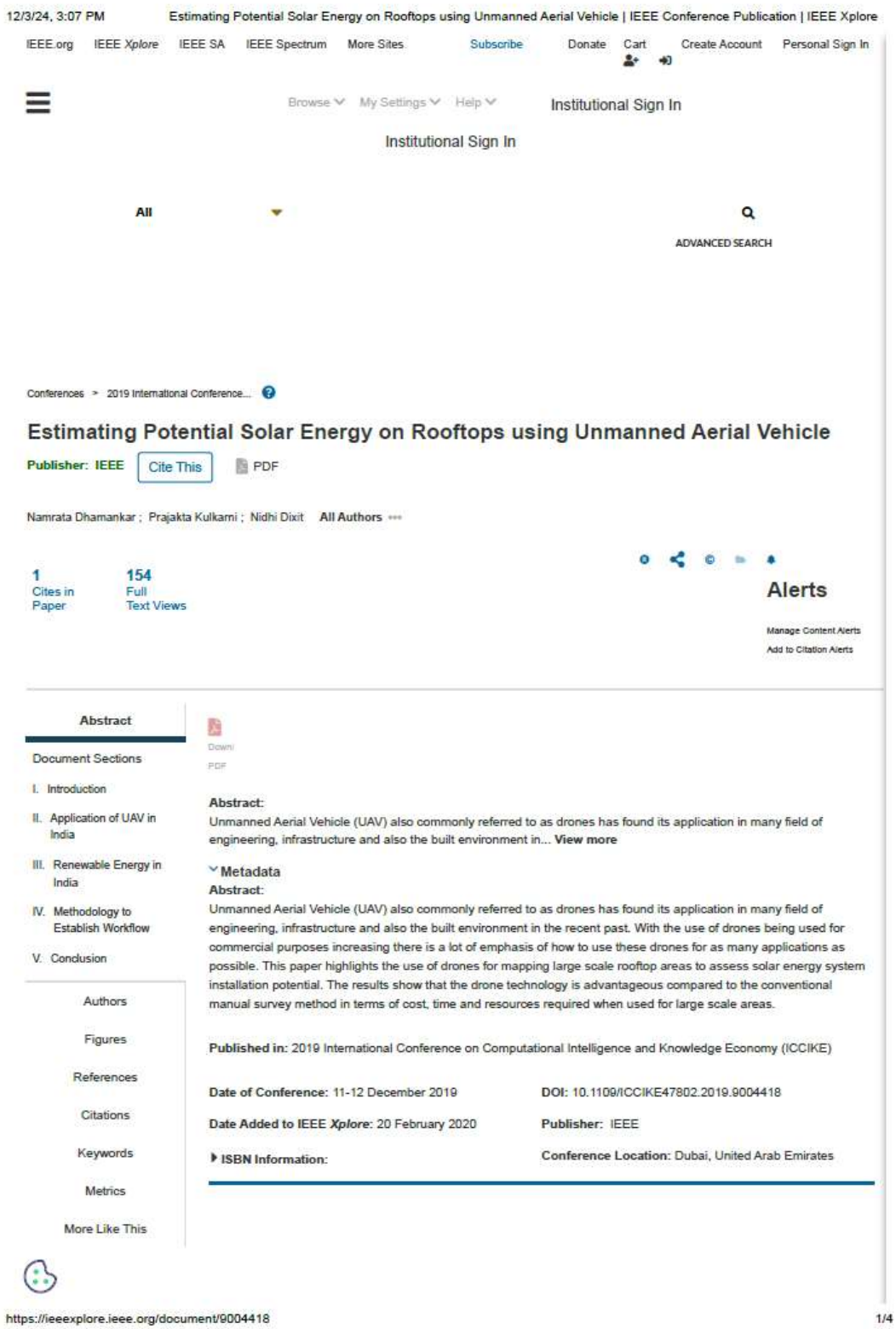

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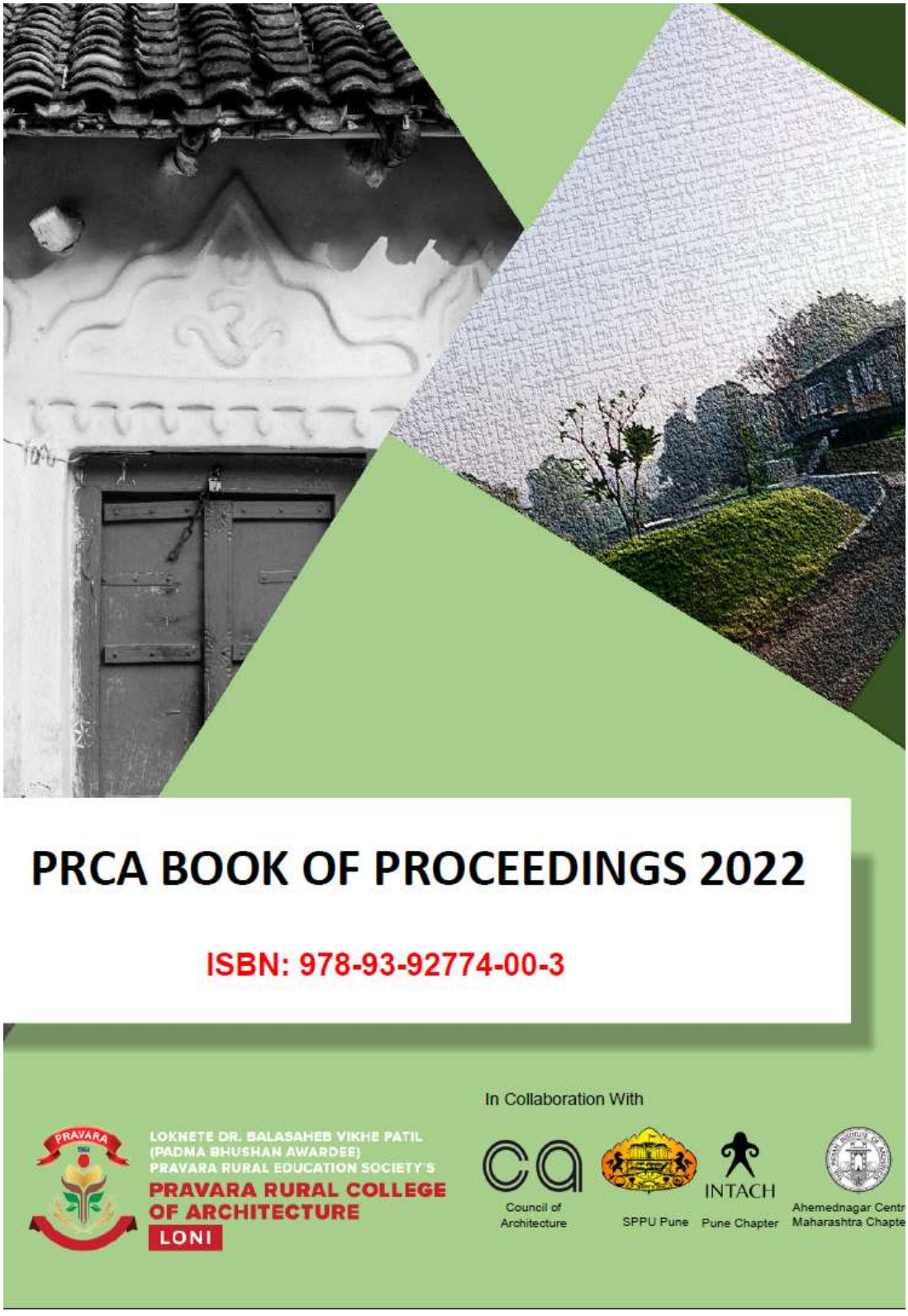

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Understanding Sacred Landscape Along River Kukadi Near Nighoj, At Ahmednagar District

Asso Prof Asmita Joshi[1], Ar. Anagha Kotkar[2], Dr.Sharvey Dhongde[3]

[1]Associate Professor, MKSSS Dr.B.N.College of Architecture for Women, SPPU

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ABSTRACT:

The relation between rivers and temple is very ancient even before the medieval period. Rivers play an important role in the life of the people. Many Hindu rites are carried out on the river banks. The temples on the river banks have brought recognition to the Rivers.Indianrivers have strong mythological belief and they are considered as scared.

Kukadi River the tributary of Ghod River flows through Maharashtra and source of the Ghodriver is at Naneghat. Kukadiriver originates at Kukdeshwar on the Sahyadrimathya near Jeevdhanfort.On the banks of the Kukadi River is the Malganga temple in Ahmednagar district. The place has gained importance as pilgrim site. There is a mythological belief associated with Goddess and river. The River Kukadi has gained importance due to the presence of potholes known as 'Potholes of Nighoj'. This is a geological phenomenon where the pebbles that are carried by the river get locked in the cracks developed in the basalt rock riverbed. These pebbles swirl around due to the water current & form pot shaped cavities in the basalt rock.

There are myths associated with the potholes and due to the mythological, historical and geological importance of this area, it becomes necessary to study the sacred landscapes along the river Kukadi. This paper attempts to understand the concept of sacred landscapes, with the case of Kukadi River and surrounding temples and visitors association with this landscape.

Keywords: Sacred landscape, cultural landscape, River Kukadi, Malganga Goddess, Potholes (Kund), Pilgrim

1 INTRODUCTION

1.1 Background

In India, rivers are not just considered asa source of water but also worshiped as deities. The rivers have been given a divine status in the Hindu mythology. There is a strong bond and association between religious places andthe rivers. Many stories are related with the rivers and the temples on the banks. In the Vedas the holiness of the rivers are described in the form of a poems and shlokas. Many famous temples in India that are located on the river banks and Rivers are considered as sacred together making theplace a sacred landscape. The temple of Goddess Malganga is situated on the banks of River Kukadi, which has the geological formations of potholes. The mythological belief about the formation of potholes and divine faith in goddess attracts number of pilgrims. A number of other temples are seen in its vicinity. This arouses curiosity to understand the relation between Malganga goddess, River Kukadi, potholes (kund), and other temples for making it a sacred landscape.

Faculty: **Rashmi Markendeya and dr Avanti Bambawale**
Title of the Paper: **Importance of Nisarg sanskar in Formative Years of School**
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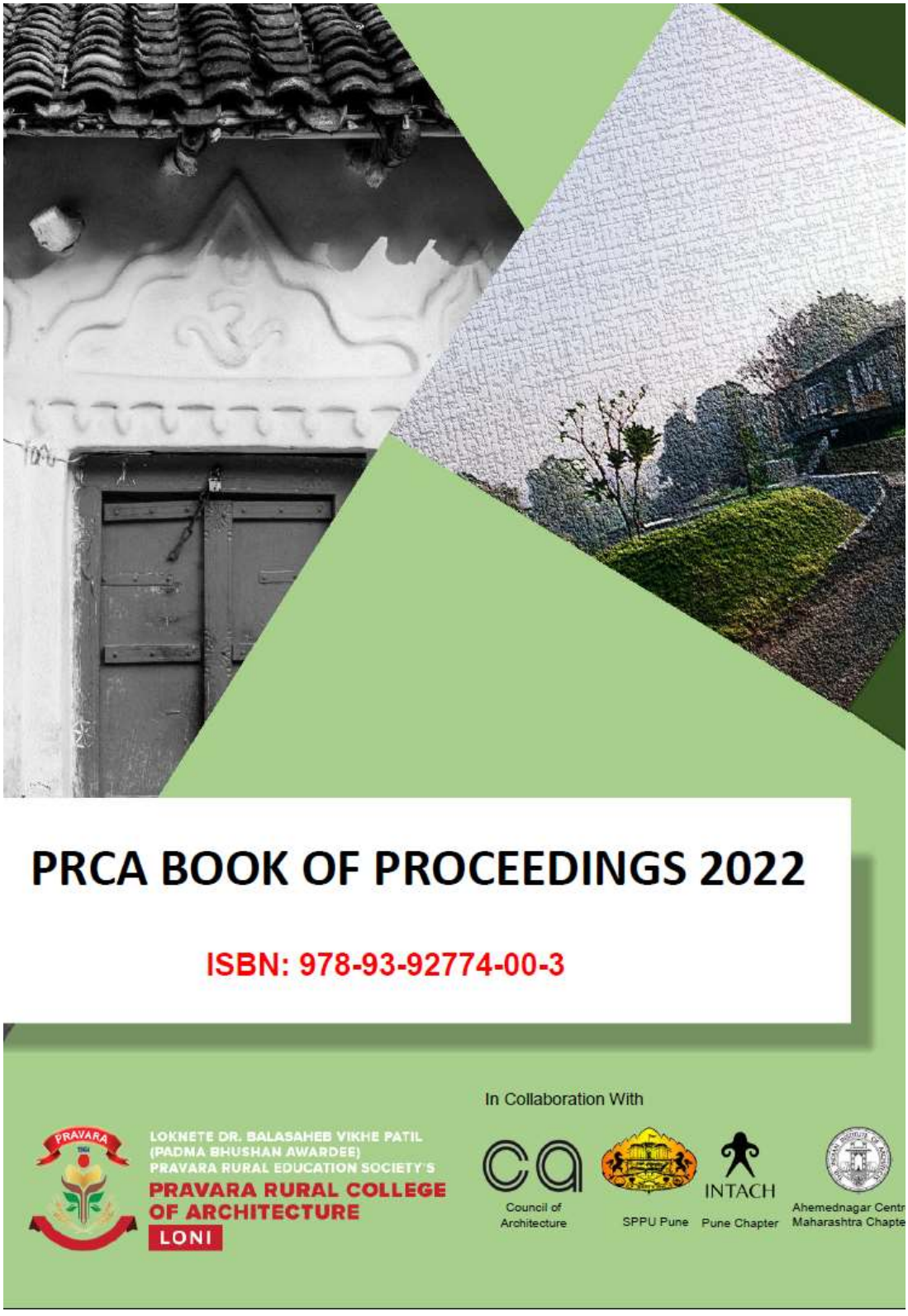

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Importance Of '*Nisarga Sanskara*' In Formative Years Of School

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Abstract: This paper performs the comparative analysis among the students from alternative schools and regular schools. The study investigated the level difference of nature awareness in these two types of schools.
Literature review was done to find out the parameters of nature awareness. The Interviews with the teachers were conducted to find out the philosophy of these two types of schools and the Questionnaire survey method was adopted. Total 86 students from alternative and regular schools were selected from simple random sampling.
The results show the significant difference in their level of nature awareness. It can be concluded that the education given with the nature experience can create the more nature awareness and attachment among the child and this may leads one step forward to save our mother earth.
We need to bridge the gap between regular education type and nature based education type to imbibe the nature awareness from childhood itself.

Keywords: Nature awareness, alternative school, regular school, school philosophy, Child.

1. Introduction:

Shree Rabindranath Tagore, the world famous Indian Poet, writer and philosopher has emphasized on education in the nature and through the experiences in the nature.
Tagore insisted that the education should be imparted in an atmosphere of nature with all its beauty, colour, sounds, forms, and such other manifestation.
In His opinion, education in natural surrounding develops education must enable a person to realise his/her immediate relationship with the nature. He also emphasized that the intimacy with the world and power to communicate with the nature.
India is richly biodiverse country in the world. So our Education, Agriculture, Business, Works should be coherent with it. From the past few years we are constantly exploiting nature with our elevating needs due to urbanisation.
'Nature based education will surely give us the Brighter Future.' *Mr.Prakash Gole,Ecological Society.'*

2. Need of the Topic:

However, there is a huge lack in awareness regarding nature and its conservation in our Country. Human wellbeing is completely dependent on Nature's prosperity. It is very much needful to make people aware about nature, its conservation and eco-friendly lifestyle.' *Nisarga Sanskara'* should be done in human life from the childhood itself.

Our regular teaching methodology talks much on the human and economic growth through urbanisation but highlights it's very less impact on the nature. The awareness may create among kids through education; via observations and activities in the nature. Such type of outdoor education should start from the schools itself so the children will interact with the nature and may start to take the interest from their young age. Through such nature based school activities the child will be introduced with the surrounding nature, natural resources, biodiversity, and this will eventually create the awareness about nature conservation. The child will develop a bond with nature and grow with the deeper understanding of environment around him/her. The child may learn to live by giving minimum stress on nature and natural resources by using alternative sources.

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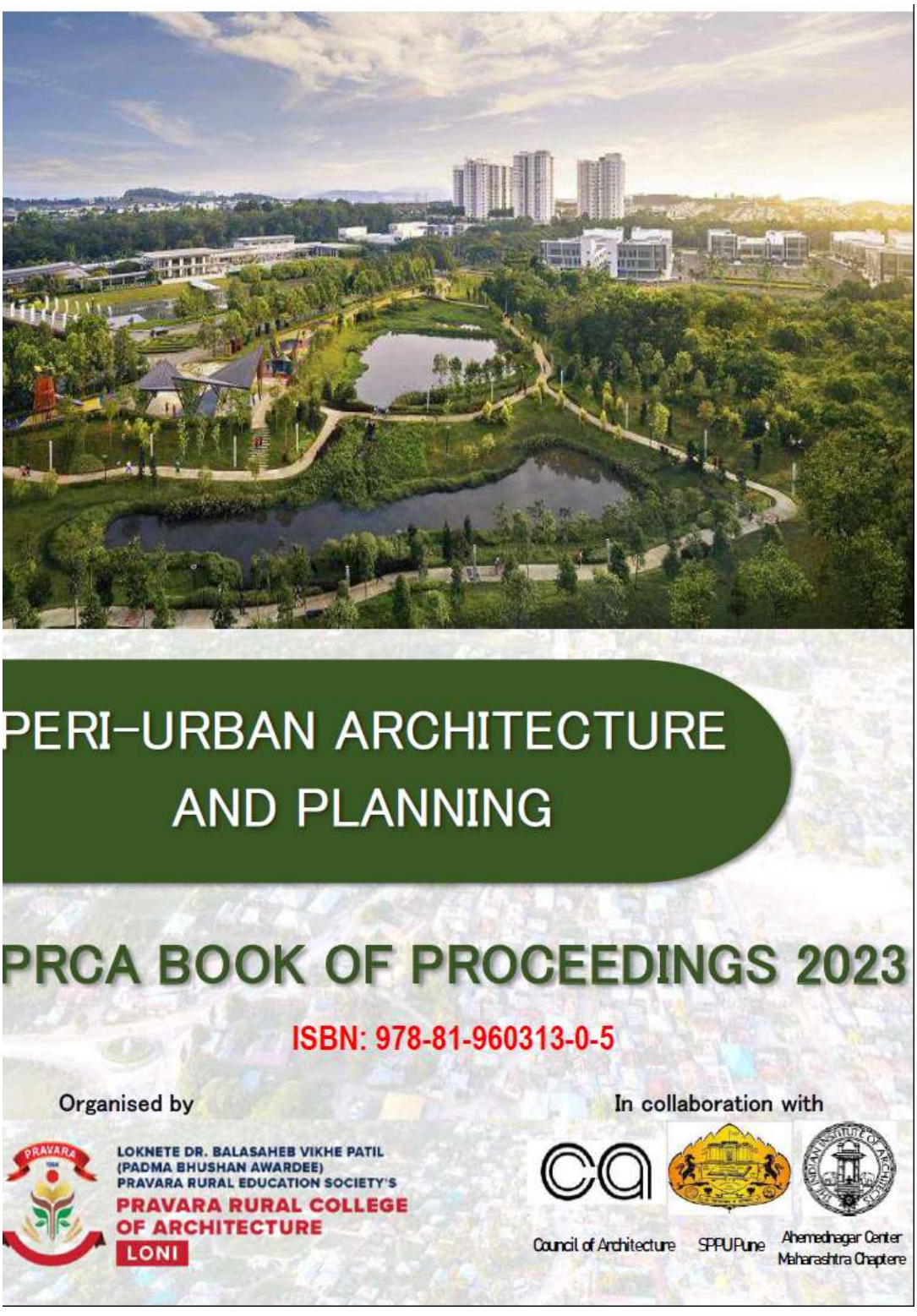

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BRIDGING THE GAP BETWEEN ARCHITECTURE AND COMMON MAN

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Abstract : The capacity to comprehend our environment through the light that enters our eyes is known as visual perception. Understanding depth, distance, and relationships to the objects around us is known as space perception. Humans are capable of perceiving, accepting, learning, and acting in accordance with movement. They are also capable of acting in accordance with suggestions made by information and signs systems. Human perception of space and of information systems in space must be considered while designing a place. People are given guidelines on how to act by information and visuals. This research aims to examine how the common man perceives architecture, particularly when it comes to facade treatments and design, moving on to the study of movement representation. The analysis of this research is based on Pune's architecture and cityscape. The well-known Wada and ancient architecture of Pune was thoroughly compared to latest advancements in architecture. A photographic survey based on the typologies of residential and commercial structures was carried out as part of the research methodology. Based on their preferences for the material, respondents were asked to rank which construction material would work best for the corresponding typologies. This research, which collected comments based on respondents' visits to Pune, had a target sample size of 60 people. Thus, a person's visual perception of architecture is influenced by several factors, including materials, interior design, lighting, façade treatments, and more. This study's methodology has been focused on examining how materials affect people, which further shapes how they see architecture. It later discusses the powerfulness that architecture needs to sustain as it provides humans with visual comfort and appeal. The paper will be concluded with exploring the smaller scale of the (narrowed down typology) architectural approach in relation to connection with space.

Keywords: Façade, Common Man, Humans, Perception, Emotions, Perspective, Spaces in architecture, Movement.

1. Introduction :

Winston Churchill once said, "We shape our structures, and then our buildings shape us," as he thought whilst repairing the bomb-damaged House of Commons in 1943. All that is left to be asked is, "What is architecture?" What is the first thing you think of when you see a building? Understanding the value and function of humans in architecture is the goal of this study. Most of the time, architects struggle to convey to the client verbally and linguistically what they have in mind for a particular project. To construct the type of structure an architect desires, it is crucial to comprehend and ascertain the process of thoughts and opinions a common man goes through after viewing numerous architectural aspects.

2. Literature review:

Aesthetic appeal of a building, in architecture, has a key concern and is generally adjudged a subjective feature. Yet some buildings are appreciated worldwide, while some others are criticized. Possibilities are there that certain built form characteristics exist, which make buildings appeal to the

Faculty: **Ms Anushka Nagle, Dr Avanti Bambawale and Dr Anurag Kashyap**

Title of the Paper: **Public Toilets, Indian Women and Urban Planning – The case of Pune**

Name of the Journal/Proceedings: Peri Urban Architecture and planning

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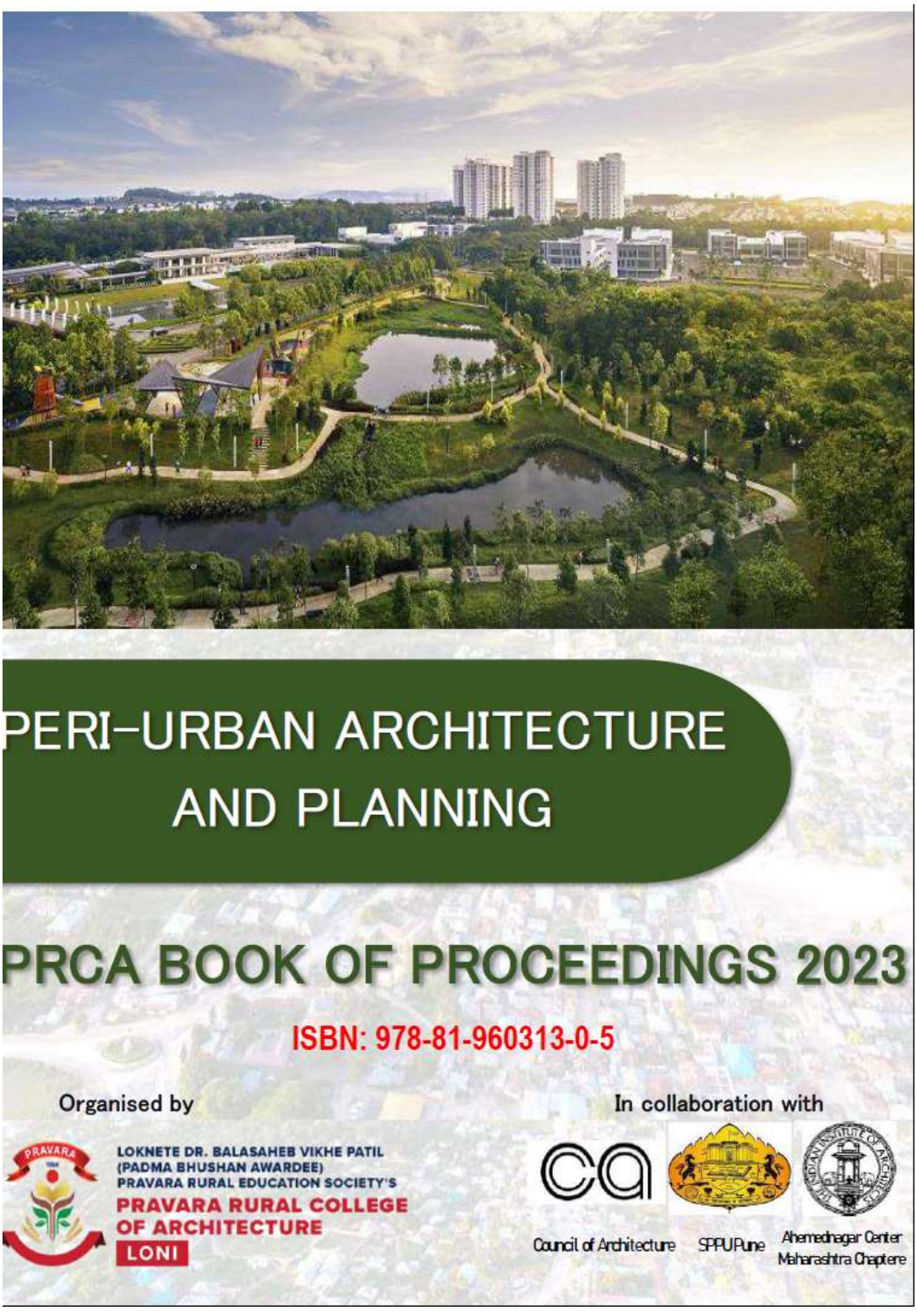

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Public Toilets, Indian Women and Urban Planning – The case of Pune

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Abstract: Public toilets in India, for women specifically, are often unsanitary, with long wait lines seen outside, due to external, demographic and biological factors. The absence/poor public toilets often result in the reduction of women's visibility and mobility in public spaces, forcing them to stay at home. Planning and allocation of toilets is one of the basic tenets of urban planning. Toilets are valuable townscape features in their own right as they add to the quality and viability of an area. India's current public sanitation framework is woefully incapable of handling the changing urban demographics and lacks inclusivity. In order to better understand the state of affairs, the author conducted a survey on a 5-point rating scale through an anonymous Google form to gauge India's current public sanitation situation. The sample size of this survey is 100 urban women and how the public toilet experience has affected them. Additionally, to further recognize women's needs, demands and expectations, image surveying and documentation of two public toilets in the Kothrud area were done. To conclude, the author has offered relevant construction and user-friendly guidelines for the same.

Keywords: Spatial planning, sanitation, hygiene, poor living conditions, health.

1. Introduction:

Planning and allocating toilets are one of the basic tenets of urban planning. Toilets are valuable townscape features in their own right as they add to the quality and viability of an area. India's current public sanitation framework is woefully incapable of handling the changing urban demographics and lacks inclusivity. Their absence often results in the reduction of women's visibility and mobility in public spaces, thus forcing them to stay at home. Through this study, we seek to better understand how the lack of foresight by city planners with respect to public toilets has a direct effect on women's mobility.

2. Literature Review:

For most people, going to the toilet in a normal situation is routine and instinctual. However, for many women, using an unfamiliar public toilet is not always easy. Despite having the desire to urinate, many will delay using the restroom when they are away from home, which can lead to urinary dysfunction and poor bladder health (Hartigan 2020). The public toilet, conceived of as a series of walled enclosures nested inside a larger enclosure, purportedly accomplishes this objective with a "hygienic imagination": by dividing "clean" public space from the "dirty" realm of the abject body (Cavanagh 2010). Therefore, a range of negative emotional reactions such as embarrassment, disgust, fear, and anxiety might appear when using a public toilet. In a recent survey, some of the observations on the condition of public toilets in India for women have been discussed (Chandra 2019). Today in Pune

Faculty: **Shivraj Dangat, Vaishali Latkar**
Title of the Paper: **Adaptive reuse in interior architecture: A future towards sustainability**
Name of the Journal/Proceedings: Understanding socio-cultural and ecological relevance of sacred groove in Western ghats Maharashtra-Panshet valley
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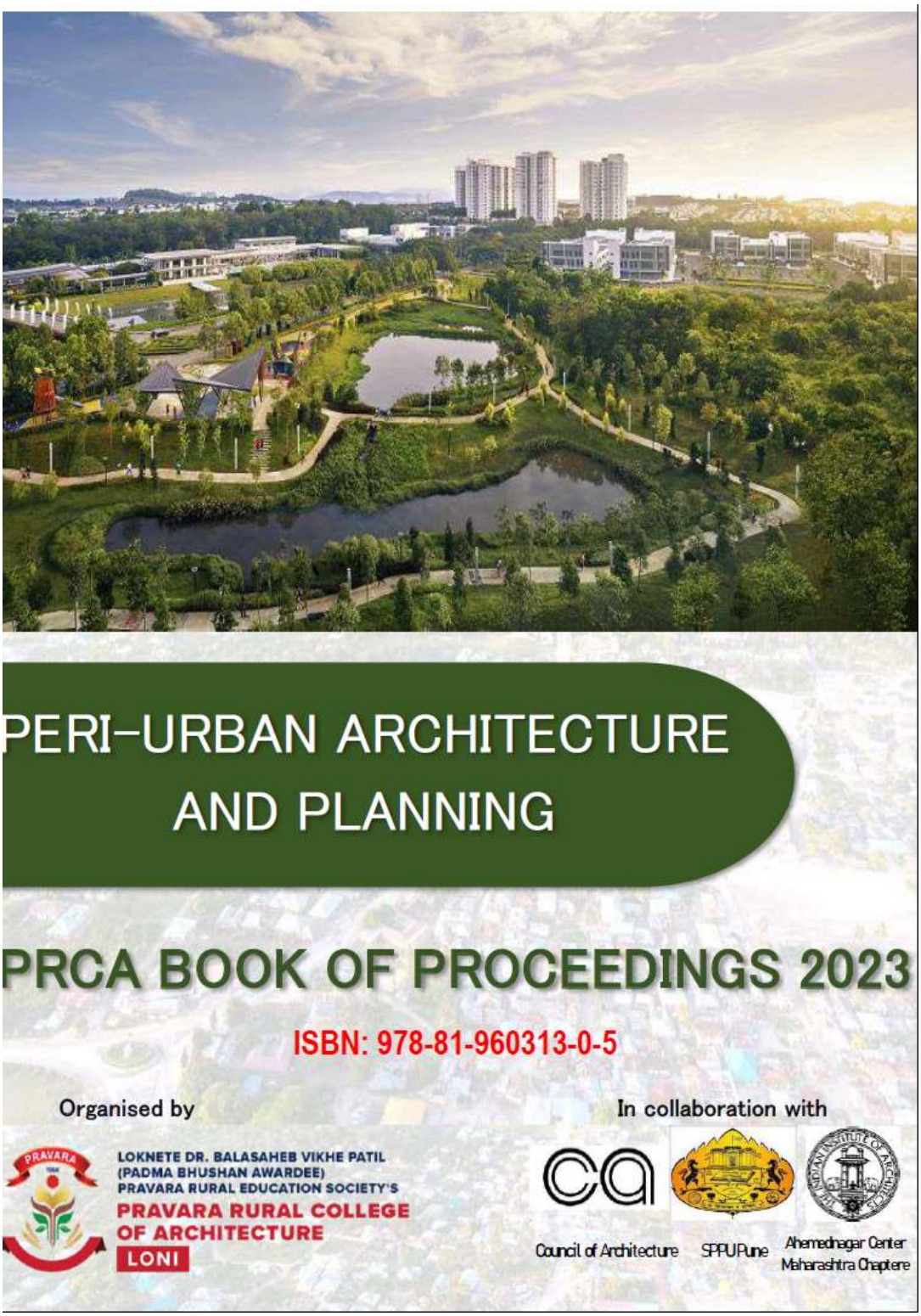

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"UNDERSTANDING SOCIO-CULTURAL AND ECOLOGICAL RELEVANCE OF SACRED GROOVE IN WESTERN GHATS MAHARASHTRA- PANSHET VALLEY."

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Abstract: The present study deals with the ecological and socio-cultural relevance of sacred groves in the Western Ghats of Maharashtra, India. Geographically, the research area is limited to two river valleys in the Sahyadri Ranges to the west of Pune. This area is full of biodiversity and is a part of Western Ghat. They are located on the historical route connecting Konkan and Pune via *Thipthipya Ghat* Community-protected areas are known as SGs. The harvest of sources is restricted, even though they provide numerous direct benefits to the Community. People could benefit from the healing properties of SGs as ethno medicines, the use of lifeless and fallen timber, seed series for nearby forestation programmers, and restricted irrigation from a nearby water supply. Locals prepared and registered as a village forest safety and control committee to eventually perform the groves' healing work. In the valley of this river, there are also some *Dhangar* deities. Temples to these deities can be found at the intersections of the pastoral route. *Bapujibuwa, Viroba*, and *Masoba* are the main deities in this temple. The *Dhangars'* traditional dance is Gaja Nach, which means elephant dance. An SG of *Panphet,* which addresses relic vegetation of the space, demonstrates that in case appropriate assurance is guaranteed, a decent quality semi-evergreen forest can develop well.

Keywords: western ghats, sacred grooves, socio-cultural, Community.

1 INTRODUCTION

1.1 Concept of the sacred groove:

The grooves were god's first temples where man learned to hew the shaft and lay the architrave. In the darkling wood amidst the calm silence, he knelt. (Bryant, 1848) (Gadgil M. a., Sacred groves in the Western Ghats in India, Economic Botany, 1976) Defined the SGs as 'sizable patches of forests where all forms of vegetation including shrubs and climbers are under the protection of the reigning deity, and the removal, even of deadwood is taboo.' They further state that this type of preservation of the entire vegetation in association with a deity is quite a distinct phenomenon from the conservation of isolated specimens of sacred tree species such as Peepal - Ficus religiosa and Umber - Ficus glomerata, which are often preserved and worshipped even without any association with a deity. Religious beliefs and indigenous rituals have affected care and respect for nature in India and other parts of Asia and Africa since time immemorial. Every aspect of religious and cultural traditions is intertwined with the forest, which aids in environmental protection. These types of woods are associated with the concept of "holy groves." (Khan, 2003) In general, SGs are areas of virgin forest that are rich in biodiversity and traditionally maintained by local communities. Our country has practiced setting

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Title of the Paper: **Punarvikasasambhadhiche Shaskiy Dhoran-Niyamavalimadhe Badal ani Avhane**
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व
भारतीय कला प्रसारिणी सभेचे वास्तुविद्या महाविद्यालय. पुणे
आयोजित,

द्वितीय राज्य स्तरीय वास्तुकला मराठी परिषद, २०२३

('ऑनलाईन' प्रणाली द्वारे)

मराठी भाषा गौरव दिनानिमित्त सोमवार दिनांक २७ फेब्रुवारी २०२३ रोजी राज्यस्तरीय वास्तुकला मराठी परिषदेचे आयोजन करण्यात येत आहे. वास्तुकला विषयाशी निगडीत माहिती व साहित्य समृद्ध तसेच व्यापक आहे. परंतु तुलनात्मक दृष्ट्या, मराठी भाषेत या विषयावर पुरेसे संदर्भ, पुस्तके उपलब्ध नाही. परिषदेचे आयोजन मराठी भाषेत करून, पुढाकार व प्रोत्साहनाचा हा एक महत्वाचा प्रयत्न व सुरुवात ठरेल असा विश्वास आहे. वास्तुकला क्षेत्रातील यशस्वी मान्यवर प्राध्यापक वर्ग विद्यार्थी तसेच व्यवसायिक या साऱ्यांनाच व्यासपीठ उपलब्ध होऊन, त्या संबंधिचे लिखाण, सादरीकरण व चर्चा यास उत्तम प्रतिसाद लाभेल अशी खात्री आहे. विविध विषयांवरील उत्तम लिखाण शोधनिबंध पुस्तिका रूपाने प्रकाशित केले जाईल.

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लेखक व सहलेखकांसाठी नोंदणी शुल्क

रू.२०० (दोनशे रूपये मात्र)

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वैशाली अनगळ, अभिजीत नातू
सहयोगी अध्यापक, सहयोगी अध्यापक आणि प्रभारी प्राचार्य
डॉ. बी. एन. कॉलेज ऑफ आर्किटेक्चर, पुणे, बी. के. पी. एस. कॉलेज ऑफ आर्किटेक्चर, पुणे

गोषवारा:
महाराष्ट्रातील पुणे,मुंबई, आणि नाशिक सारखी शहरे असोत किंवा कर्नाटकातील बेंगलोर, तामिळनाडू मधील चेन्नई किंवा पश्चिम बंगालमधील कोलकत्ता शहर असो; भारतातील या सर्वच मोठ्या शहरात जुन्या रहिवाशी इमारतींच्या पुनर्विकासाची गरज गेल्या दोन दशकात भासत आहे . गेल्या दशकापासून महाराष्ट्रात रहिवाशांनी पुढाकार घेऊन केलेला पुनर्विकास खूप मोठ्या प्रमाणावर होत आहे . या शोधनिबंधात खाजगी सदनिका इमारतींच्या पुनर्विकासाचे शासकीय धोरण, नियमावली आणि त्यातली आव्हाने यांचा आढावा घेण्यात आला आहे. त्यासाठी महाराष्ट्रातील सरकारने वेळोवेळी केलेल्या नियमावलीचा अभ्यास करून तसेच या क्षेत्रातील तज्ञ वास्तुकलाविषारद आणि विधीज्ञ यांच्या मुलाखती घेऊन निरीक्षणे नोंदवण्यात आली आहेत.

१ .पार्श्वभूमी -
महाराष्ट्रात मुंबई येथे विसाव्या शतकाच्या सुरुवातीस पहिली सदनिका इमारत बांधली गेली (अय्यर ,२०१४). त्यानंतर वाढत्या शहरी शहरीकरणाच्या रेट्यात मुंबई पुणे यासारख्या मोठ्या शहरांमध्ये १९७० ते १९९० या दोन दशकांमध्ये तीन-चार मजली सदनिका इमारती बांधण्याला पेव फुटले. शहरातील नोकरीच्या शोधात येणारे वाढते चाकरमाने, आणि शहरातील गावठाण भागात असलेली गर्दी यामुळे शहराबाहेरील भागात अशा सदनिकांचा खूप मोठ्या प्रमाणावर विकास झाला. या सदनिका आकाराने छोट्या, साधारण एक किंवा दोन शयनगृहे असलेल्या, एक स्नानगृह आणि एक संडास असलेल्या आणि नवीन उदयास आलेल्या मध्यमवर्गीय समाजाला परवडतील अशा सोयी असलेल्या होत्या. त्या काळात चार चाकी गाडी ही मध्यमवर्गीय लोकांना परवडणारी नसल्याने या इमारतींना तळमजल्यावर पार्किंगची सोय नव्हती.
पुढे तीस-पस्तीस वर्षानंतर, वाढलेले कुटुंब आणि त्यामुळे भासणारी जागेची कमतरता, काळानुसार बदललेल्या घरातील अंतर्गत सजावटीच्या गरजा , मूळ रहिवाशांच्या वाढलेल्या वयामुळे जिने चढ-उतार करायला होणारा त्रास आणि लिफ्टची कमतरता, नवीन चार चाकी आणि दुचाकी वाहने आल्यामुळे होणारी पार्किंगची गैरसोय, इमारतीचे वाढते वय आणि त्यातून होणारा दुरुस्त्या व देखभालीवरचा खर्च, जमीन भिंत आणि छत यातून येणारा ओलावा आणि त्यामुळे होणारी गैरसोय या अशा अनेक कारणांमुळे या इमारती राहण्यासाठी गैरसोयीच्या होऊ लागल्या आणि या इमारतींच्या पुनर्विकासाची गरज भासू लागली .
साधारणपणे, २००० दरम्यानच्या काळात चटई निर्देशांक वाढल्यामुळे या इमारती पाडून पूर्वीच्या इमारतीच्या जागी अधिक बांधकाम करणे शक्य होऊ लागले. त्यामुळे मूळ मालकांना थोडी अधिकची जागा देऊन उर्वरित बांधकाम नवीन सदनिकांच्या रुपात वाढलेल्या बाजार मूल्याप्रमाणे विकून त्यातून फायदा मिळवणे विकसकाला शक्य होऊ लागले. तसेच, अशा प्रकल्पांमध्ये शहरात जमीन विकत घेण्यासाठी करावा लागणारा अवाढव्य खर्चही विकसकाच्या दृष्टीने वाचणार होता. यातूनच साधारण २००० च्या आसपास मोठ्या प्रमाणावर सदनिकां इमारतींचा पुनर्विकास होऊ लागला. परंतु, त्याकाळी खाजगी गृहनिर्माण सहकारी संस्थांच्या इमारतींच्या

Faculty: **Dr Sujata Mehta and Dr S Purohit**
Title of the Paper: **Seisemic Response Control of benchmark Building using Shape Memory Alloy Based Semi-active Tension Sling Damper**
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Proceedings of the 8th World Congress on Civil, Structural, and Environmental Engineering (CSEE'23)
Lisbon, Portugal – March 29 – 31, 2023
Paper No. ICSECT 116
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Seismic Response Control of Benchmark Building using Semi-active Shape Memory Alloy based Tension Sling Damper

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Abstract – Seismic protection of building has remained important due to increased seismic activities as well as stringent seismic performance criteria. Recent past has seen surge in utilization of smart materials with controllable properties for seismic performance enhancement of structural systems. NiTinol Shape Memory Alloys (SMA) exhibiting super-elasticity and shape memory effect makes it a promising candidate for seismic protection applications. Novel SMA based tension sling damper (SMA-TSD) is developed incorporating super-elastic SMA slings and temperature controlled SMA springs. It is placed at ground story of a three story benchmark building for both; passive and semi-active seismic protection. Hysteretic behaviour of SMA-TSD is characterized by one-dimensional Tanaka model and is mapped to equivalent linear Voigt model for implementing it with linear benchmark building. Desired damper force of semi-active SMA-TSD is evaluated by Linear Quadratic Regulator (LQR) control strategy and realized by Shape Recovery Force (SRF) of SMA springs through SRF-Temperature-strain relationship. SRF is applied to expand passive hysteretic loop of super-elastic SMA slings within recoverable strain limit of 6%. Peak displacement, peak inter-story drift and peak acceleration responses show moderate reduction of the order ~12%-39% for passive off control strategy except peak acceleration at first story, substantial reduction of the order ~47%-71% when passive on and LQR control strategies are used for controlled benchmark building subjected to Taft seismic excitation. LQR control strategy yields substantial reduction in peak seismic parameters by realizing peak damper force in SMA-TSD as low as 284.90 N. Temperature is varied between practical range of 20°C to 60°C for generating SRF from SMA springs commanded by 5V battery only. Design parameters of SMA-TSD; diameter, number and length of SMA sling/s can be optimized to obtain enhanced seismic performance of the benchmark building.

Keywords: Semi-active damper, Linear Quadratic Regulator, Shape Memory Alloys, Benchmark building, Tanaka model

1. Introduction

Frequent occurrence of seismic activities warrants various seismic protection strategies. While passive seismic protection systems have been implemented successfully, active, semi-active and hybrid control systems, are evolving rapidly. Active control system requires continuous power supply during an earthquake, on the other hand semi-active systems show more promise with reduced power requirement. Semi-active devices developed till date, mostly utilize capabilities of smart materials to adjust their mechanical properties in real time by application of external power source such as voltage, current, magnetic field, electric field, temperature etc. Shape Memory Alloys (SMA), a relatively newer class of smart materials possess unique characteristics like super-elasticity and Shape Memory Effect (SME), along with suitable mechanical properties, making them a potential candidate for development of semi-active seismic protection device. A variety of SMAs (Cu-Zn, Cu-Al, Cu-Sn Fe-Pt, Fe-Mn- Si) are explored however, NiTi alloys are widely used SMAs for engineering applications [1]. NiTi SMA have found application in aeronautical, biomedical, robotic and automobile industries due to unique characteristics of; Shape Memory Effect (SME) - ability to regain original shape upon change in temperature and Super-elasticity - large elastic recoverable strain (of the order~6%). NiTi SMA exist in two phases namely austenite - stable at high temperature having body-centred cubic crystal structure and martensite - stable in low temperature having parallelogram structure. Phase transformation of SMA can be stress induced (loading and unloading) or temperature induced (heating and cooling). Nonlinear hysteretic behaviour of SMA was represented by one dimensional phenomenological model

Faculty: **Vaishali Latkar with Abhijt Natu**
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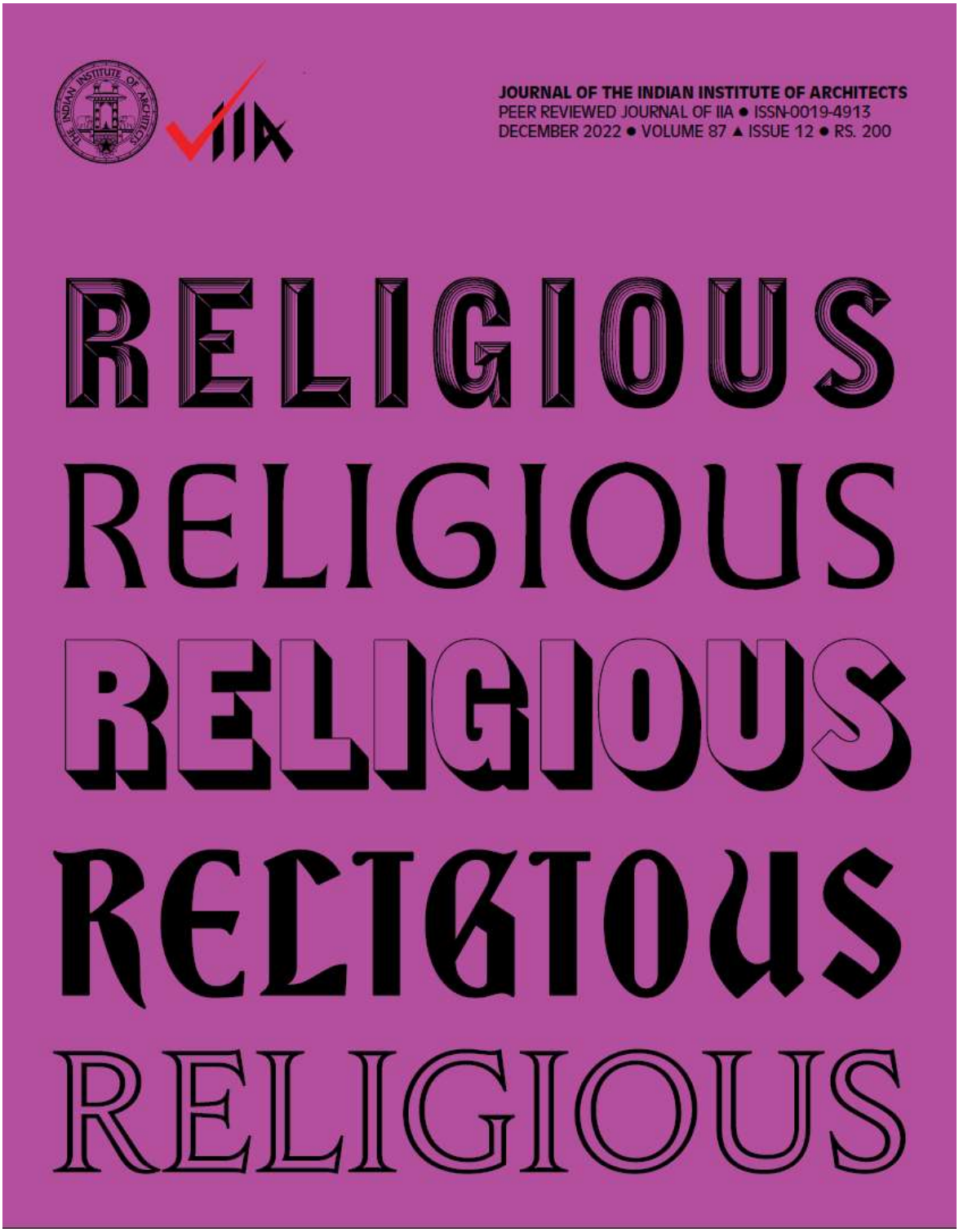

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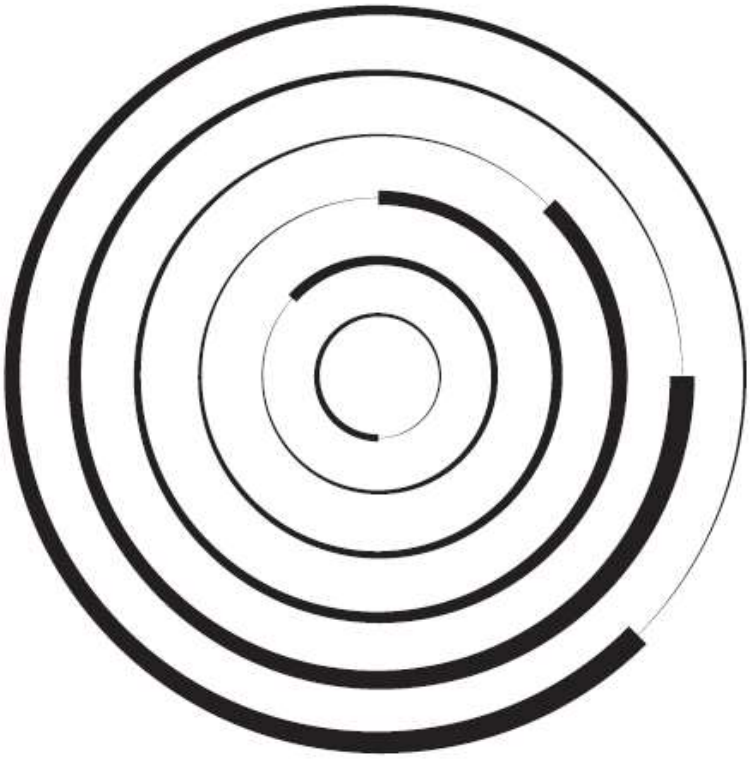
SIGNIFICANCE AND FORMS OF SAMADHI MANDIRS IN THE SACREDSCAPE OF THE LORD VITTHALA, PANDHARPUR



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ABSTRACT

The Varkari sect, a regional variation of the Bhakti movement in Maharashtra is known for its worship of Lord Vitthala, egalitarian approach, and literature by saints. The religious architecture of the Varkari sect includes celebrated typologies of temples, maths and phads. Samadhis or memorial shrines, that form an important typology of the religious architecture of the Varkari sect, are less studied and discussed. Memorial shrines have associational values, and they dominate the sacredscape of the Lord Vitthala along the River Bhima. There is a rich variation in the manifestation of samadhis in the built form.

The paper focuses on the development of architecture of memorial shrines in response to changes in the religious traditions of the Varkari sect. The study uses primary data collected through mapping, inventory and key informant interviews. Archival data helped in tracing the changes in the religious practices of Varkaris. Four types of samadhis are identified, viz, a samadhi temple, tulasi-vrindavan, samadhi platform and free-standing stone slab samadhis. The rich variety of memorial shrines discovered help in establishing samadhis as an important heritage typology of the Varkari sect, that needs to be given due importance in conservation of Lord Vitthala's sacredscape.

Key words- *Varkari sect, Bhakti movement, samadhi, memorial shrine, Pandharpur.*

Introduction.

The sacredscape of Vitthala is defined by overlays of spatiality of religious practices of Puranic Hinduism[i], folk religion, reimagined landscapes from Krishna's life as well as the network of sacred places from the *Bhakt* (devotional) movement with spiritual practice of devotion to the God, which flourished in mediaeval times. Vitthala, also known as Panduranga, is the main deity of the *Varkari* sect that emerged as a regional variation of the devotional movement in Maharashtra. Vitthala, standing on the banks of the River Bhima at Pandharpur, is central to the *Varkari* faith, which is Vaishnava[ii] in nature. More than a million *Varkaris*[iii] walk to Pandharpur to meet Vitthala on *Ashadhi Ekadashi*[iv] every year as *Vari,* an annual pilgrimage to Pandharpur. The bank of the River Bhima is dotted with many memorial shrines of different forms. Historically, Pandharpur developed through various phases and is a rich repository of varied building typologies evolved along the way. The temple complex of Vitthala, along with numerous temples, *maths*[v] and *phads*,[vi] as well as *dharmashalas*[vii] form a rich variety of living heritage. A thorough study of the built heritage at Pandharpur reveals the existence of samadhi mandirs or memorial shrines in abundance, especially along the riverbank. *Samadhi* temples were built in the memory of the heads of *maths* and *phads,* religious institutions associated with *Varkari* sect. This paper focuses on the development of the architecture of memorial shrines in response to the changes in the religious traditions of the *Varkari* sect.

Background and literature study

The sacredscape of Vitthala has developed through the Puranic times, the period of Bhakti, along with traces of folk religion in the region of Pandharpur. Pandharpur is a modest town having a population of approximately 99,000, according to the 2011 Census. It is located in the Solapur district of Maharashtra, on the banks of the River Bhima (Fig. 2). It is a Vaishnava sect worshipping Lord Vitthala, an incarnation of Lord Krishna. Though the earliest reference of Panduranga is seen in the 6th century CE, (Deleury, 1960), it evolved as a place of pilgrimage only after the 13th century CE, because of the spread of the Bhakti Movement in Maharashtra. The *Vari,* an annual pilgrimage to Pandharpur on occasion of *Ashadhi Ekadashi* fetches more than a million *Varkaris* to Pandharpur from various regions in Maharashtra and neighbouring

Fig 1. Samadhi temples in the sacredscape of Vitthala.
(Image Credit: Omkar Aradhye, Pandharpur)

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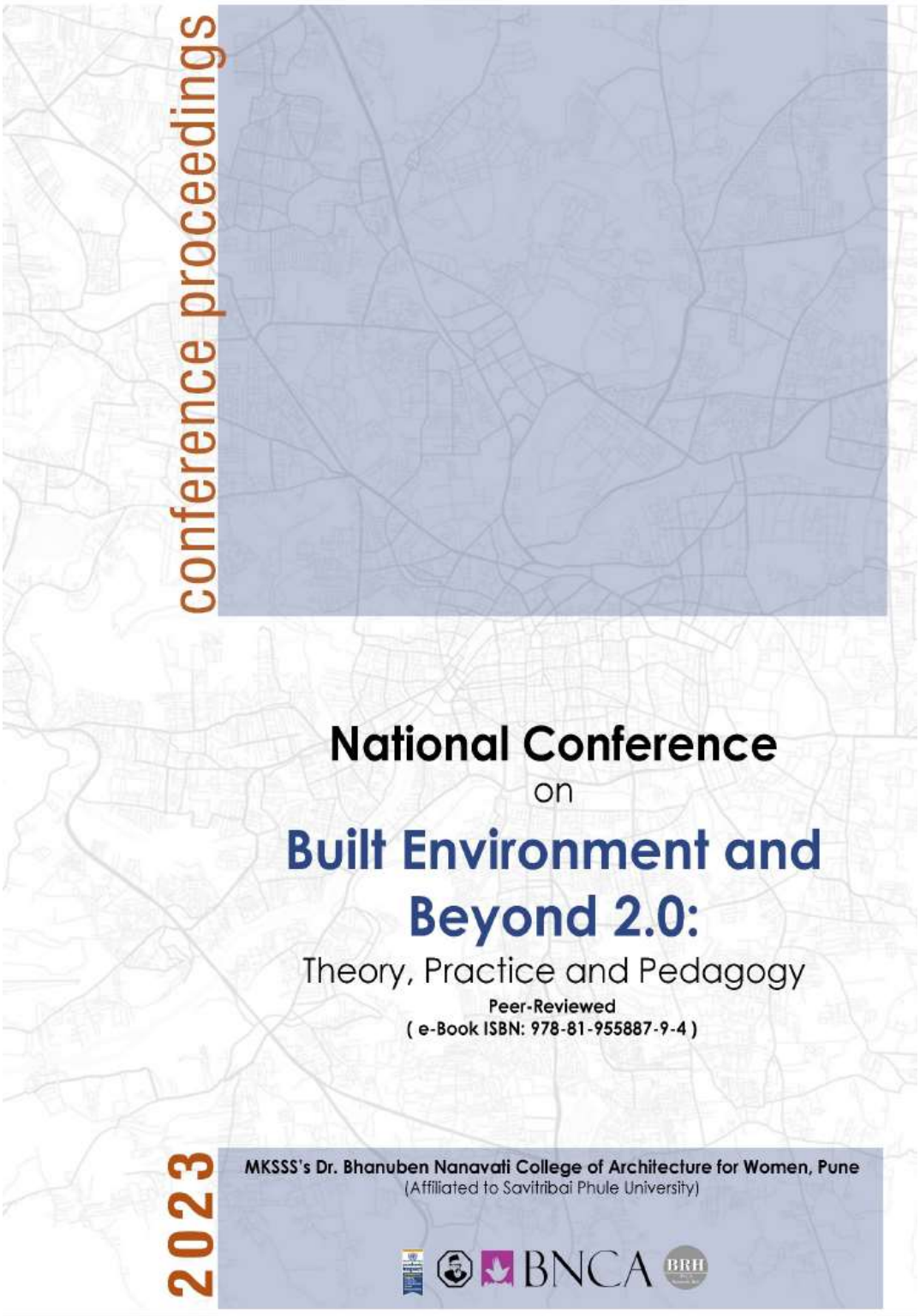

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Stepwells: An Ancient Technology of Water Conservation

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Abstract:

The research aims at studying in-depth the ancient manmade water resources as well as water conservation structures the "Stepwells" of the Indian Subcontinent. It encompasses the study of origin and the evolution of stepwell construction methodology as they were a reliable source of water accessibility for the native. The research adopts a case study method. The case studies include various archaeological sites and the stepwells that are currently in use. It throws light on the factors affecting their site selection, design principles, materials used, and construction techniques. This research helps us understand how the basic "wells" transformed into "stepwells" which not only gained importance as socializing places but also evolved as massive ornamented underground structures. The causes for the gradual loss of prominence and later abandonment of these ancient water sources are also discussed.
The design and construction techniques of these stepwells are peculiar to certain regions which grant them their uniqueness and beauty and makes this research more interesting.

***Keywords**: water conservation, stepwells, construction techniques, water scarcity.*

1. Introduction:

'Water is life.' Since time immemorial human history has always revolved around water sources. The earliest settlements and human civilizations have always prospered in the vicinity of rivers and lakes. Eventually, the water sources started dwindling which gave rise to water conservation structures like "Stepwells".
The earliest Stepwells were elementary structures that were dug into the ground and are commonly found in Western India and other arid regions of the Indian Subcontinent.
With the progression of time, these multi-storeyed Stepwells not only assumed immense importance as a water source and a place for socializing but also represented the rulers and his kingdom's great patronage for art and architecture by way of embellishment and ornamentation.
India's landscape is adorned with Stepwells from different eras and are of varying dimensions. A 5000-year-old Stepwell has been recently discovered in one of the largest Harappan cities, Dholavira, Kutch which is three times bigger than the Great Bath at Mohenjo-Daro. Abhaneri, Rajasthan boasts of having Chand Baori the largest stepwell in India.

Faculty: **Amruta Barve and Vaishali Anagal**
Title of the Paper: **Shaharachya Varasamulyabaddal Jagruktata Vadhavanyasathi Aslele Khelache Mahatwa**
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मराठी भाषा गौरव दिनानिमित्त सोमवार दिनांक २७ फेब्रुवारी २०२३ रोजी राज्यस्तरीय वास्तुकला मराठी परिषदेचे आयोजन करण्यात येत आहे. वास्तुकला विषयाशी निगडीत माहिती व साहित्य समृद्ध तसेच व्यापक आहे. परंतु तुलनात्मक दृष्ट्या, मराठी भाषेत या विषयावर पुरेसे संदर्भ, पुस्तके उपलब्ध नाही. परिषदेचे आयोजन मराठी भाषेत करून, पुढाकार व प्रोत्साहनाचा हा एक महत्वाचा प्रयत्न व सुरुवात ठरेल असा विश्वास आहे. वास्तुकला क्षेत्रातील यशस्वी मान्यवर प्राध्यापक वर्ग विद्यार्थी तसेच व्यवसायिक या साऱ्यांनाच व्यासपीठ उपलब्ध होऊन, त्या संबंधिचे लिखाण, सादरीकरण व चर्चा यास उत्तम प्रतिसाद लाभेल अशी खात्री आहे. विविध विषयांवरील उत्तम लिखाण शोधनिबंध पुस्तिका रूपाने प्रकाशित केले जाईल.

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शोधनिबंध लिहिण्यासाठी नमुना

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परिषदेसाठीचे उपविषय : (उपविषयांची रूपरेखा)

१. पर्यावरण व भूदृश्य
२. सर्वसमावेशकता
३. पर्यायी व नाविन्यपूर्ण तंत्रज्ञान
४. स्वातंत्र्योत्तर वास्तुकला
५. नवी शहर नवी वाटचाल
६. कोरोना साथीनंतरची वास्तुकलेतील स्थित्यंतरे
७. नगरनियोजनातील नवीन आव्हाने
८. उत्पादन रचनेतील विविधता
९. अंतर्गत सजावट
१०. वास्तुकलेचा इतिहास
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१२. वास्तुकलेतील संगणकीय अनुप्रयोग
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भाषा जनाची भाषा मनाची

संपर्क क्र. व इ-मेल

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२. मराठी अक्षरप्रकार आकार:
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४. शोधनिबंध पाठविण्याचा
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कळविण्याचा दिनांक: १८ फेब्रुवारी २०२३

लेखक व सहलेखकांसाठी नोंदणी शुल्क

रू.२०० (दोनशे रूपये मात्र)

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शहराच्या वारसा मूल्यांबद्दल जागरूकता वाढवण्यासाठी असलेले खेळांचे महत्त्व

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गोषवारा :

गजबजलेल्या ऐतिहासिक शहरांमध्ये, विविध भागातून असणारी वारसा स्थळे, त्याबद्दलची माहिती आणि जागरूकता याबद्दल नागरिकांमध्ये कमालीचा अभाव दिसून येतो, यामध्ये मुळात अशी स्थळे अस्तित्वात आहेत याबद्दल माहितीचा अभाव, शहरातील रस्त्यांबद्दलचे अज्ञान, अपुरा वेळ आणि माहितीपूरक प्रभावी माध्यमांचा अभाव अशी आव्हाने नागरिकांपुढे असतात. अशा परिस्थितीत वारसा स्थळांबद्दल जागरूकता वाढवण्यासाठी आणि माहिती ग्रहण करण्यासाठी खेळ अत्यंत प्रभावी ठरू शकतात का, तसेच परस्पर संवादी आणि आकर्षक अनुभवांद्वारे, आणि सक्रिय सहभागातून खेळ नागरिकांना आपल्या शहराकडे बघण्याचा नवीन दृष्टिकोन देऊ शकतात का असा अभ्यास या संशोधनाद्वारे करण्यात आला आहे. वारसास्थळा संबंधी एका खेळाचा अभ्यास करून प्रश्नावली द्वारा खेळाडू नागरिकांकडून घेतलेल्या अभिप्रायातून शहरासंबंधी जागरूकता, शहरातील विविध घटक आणि शहरातून प्रवास करताना जाणवलेल्या शहरनियोजानातील त्रुटी या बाबतचे निष्कर्ष या अभ्यासाद्वारे मांडण्यात आले आहेत.

परिचय :

प्रत्येक शहराची एक ठराविक ओळख असते. शहराचे नैसर्गिक वातावरण, भौगोलिक स्थान, सांस्कृतिक प्रक्रिया, पारंपारिक विश्वासप्रणाली, आर्थिक रचना, राजकीय, कायदेशीर आणि सामाजिक व्यवस्था इत्यादी विविध पैलूंद्वारे त्याची व्याख्या केली जाते [५]. शहराची आभासी प्रतिमा तयार होण्यासाठी विविध घटक कारणीभूत ठरतात. अगदी सूक्ष्म स्तरावरील घटकांच्या तपशिलापासून ते मोठ्या स्तरापर्यंत हे घटक असू शकतात. हे घटक वास्तुशास्त्रीय दृष्टीने महत्त्वाचे असू शकतात तसेच यामध्ये रस्ते, ठराविक जागा इत्यादी घटकांचा समावेश असू शकतो. हे घटक वेळोवेळी अनेक बदलांमधून जातात आणि या प्रक्रियेत प्रत्येक कालावधीची वैशिष्ट्ये टिपतात. त्यांना 'स्थान' निर्माण करणारे घटक' किंवा 'प्लेस मेकिंग एलिमेंटस' म्हणतात. या घटकांमधील नवेपणा, एखाद्या घटकाचा समूळ नाश, फेरफार, कालपरत्वे होणारा हास, यामुळे माणसांसाठी त्या जागेची नवीन प्रतिमा

Faculty: **Divya Chadhari, Namrata Dhamankar**
Title of the Paper: **Data driven investigation of thermal comfort in an informal settlement – a case of Mumbai**
Name of the Journal/Proceedings: BSO VI 2022, 6th Building Simulation and Optimization Virtual Conference Dec 2022, Univ of Bath, UK
International Journal

INTERNATIONAL BUILDING PERFORMANCE SIMULATION ASSOCIATION ENGLAND

Proceedings of BSO-VI 2022
Sixth Building Simulation and Optimisation Virtual Conference
13 - 14 December 2022
Hosted by University of Bath, UK

Data driven investigation of thermal comfort in an informal settlement – a case of Mumbai

Abstract

Large pockets of informal settlements are a common sight, especially in emerging economies like India. The built environment of these informal settlements remains an area less explored. This research therefore aimed to investigate thermal comfort in typical urban informal settlements. Real time onsite monitoring of environmental parameters affecting thermal comfort for 2 houses in a selected settlement of Mumbai was done which led to an inference that roof element of the house receives maximum solar radiation. The two cases were then further simulated in Design Builder to understand the effect of solar radiation and heat gain through the roof which is exposed the most. The research further expanded to studying mitigation strategies by adopting multiple roof assemblies as retrofit solutions for these houses. These assemblies were studied keeping thermal conductance, ease of installation, strength and over workability and maintenance into consideration. The research reveals how an overall study of thermal comfort through a data-driven approach can assist stakeholders and authorities to develop design-guidelines and strategies for thermal comfort in informal settlements.

Key Innovations

- Field studies conducted to understand the thermal comfort in informal settlements.
- Retrofitting solutions for roof sections tested for thermal performance as well as its affordability and maintenance.

Practical Implications

Through this research, yearly data was analysed through simulation to determine that most of the months in the warm and humid conditions of Mumbai fall out of the comfort zone. The results of modelling various retrofit options over the roof, where most of the solar radiation is gained, revealed which option enhances the thermal comfort within an informal dwelling. The field study actually gave an insight into how the spaces in these settlements are not comfortable to carry out daily activities with ease. The alterations suggested therefore will help the owners of these houses themselves retrofit and maintain these roofing solutions for comfortable indoors.

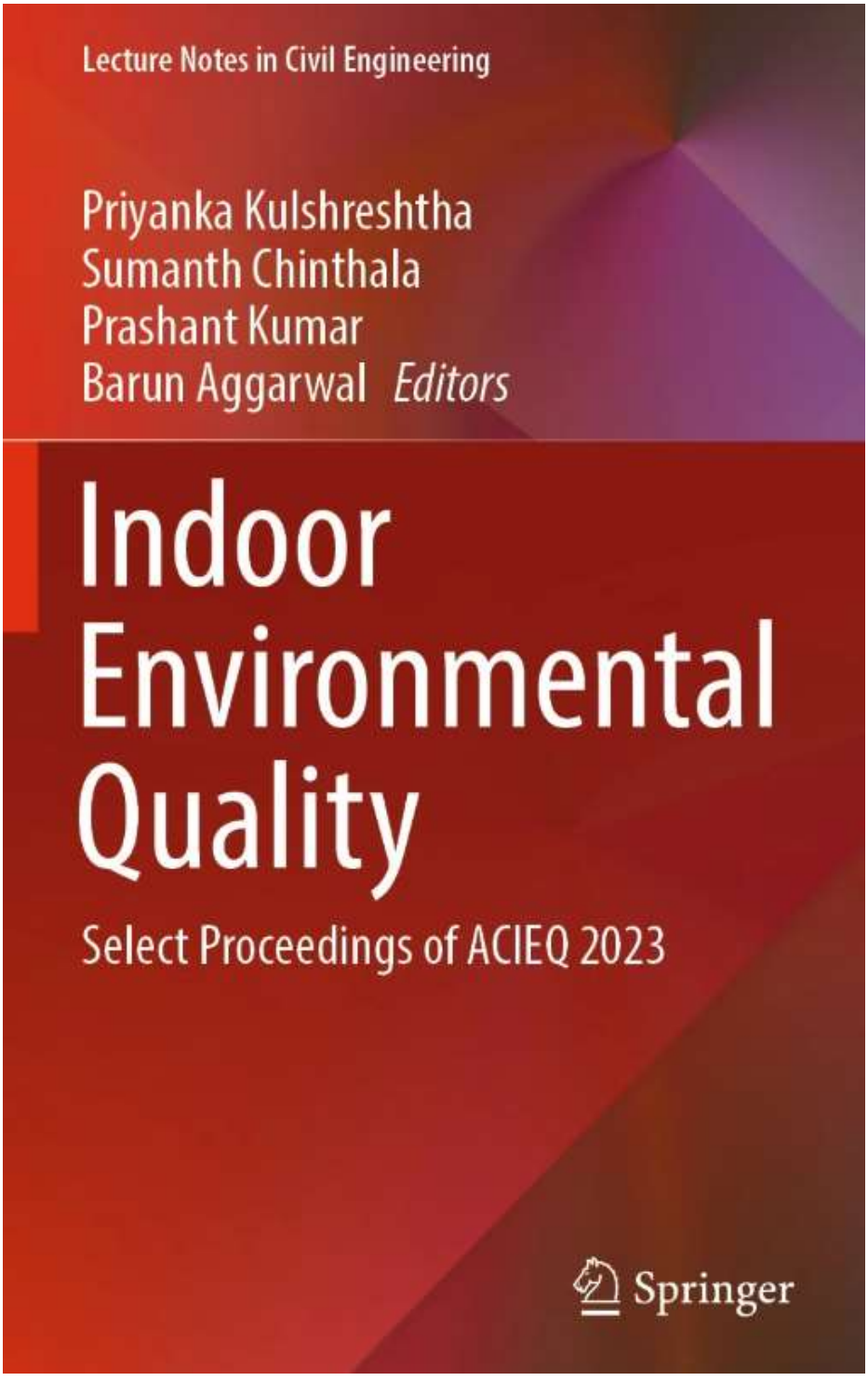
Introduction

In earlier times, most people around the world lived in small communities. Over the past few centuries, especially in recent decades, there has been a mass migration of populations from rural to urban areas. By 2017, 4.1 billion people were living in urban areas, which means more than half of the world (55%) live in urban areas. Quality of life in urban centres is of course an important measure of well-being. One measure of living standards is the proportion of the urban population living in slum households. Slums are defined as a group of people living under one roof without one or more of the following conditions: access to improved water, access to improved sanitation, adequate living space and sustainable housing.

In India, 33.60% of the population lives in urban areas as seen in Figure 1. (UN World Urbanization Prospects: 2018). As per the Census of India 2011, Maharashtra houses the highest number of slum households (Census of India, 2011). Greater Mumbai sees the highest proportion of the slum households to the total urban household. The gap between Mumbai and the second highest metro-city i.e. Kolkata is 11.7% (Census of India, 2011). Individuals and households in low-income communities and slums are exposed to heat indoor. Thermal well-being is important for the efficient functioning of living beings which remains a neglected area of focus in slum settlements A WHO, Europe review of housing and energy policies shows that affordable energy used to maintain thermal comfort is generally not considered a health concern, although it is particularly relevant for households with lower income levels. Indoor thermal comfort affects humans psychologically and physiologically. It positively impacts health and productivity and improves the sense of wellbeing (Shaikh et al., 2014). For these reasons, thermal comfort for all should become an important goal for all developing countries. Most of the housing structures in the slums are inferior in quality and do not comply with local building codes and good construction practices. Often slum dwellers have no legal title to the house in which they reside or any other form of secure property. Furthermore, public institutions do not usually consider slums as part of the city's housing infrastructure. This is one of the reasons why there is very little data on slum settlements in many countries and especially their housing comfort conditions.

Link: https://publications.ibpsa.org/proceedings/bso/2022/papers/bso2022_56.pdf

Faculty: **Tanishka Kharat, Namrata Dhamankar**
Title of the Paper: **Investigating Student's Perception of Visual Comfort in Architecture Studios and Its Impact on Their Work Output**
Name of the Journal/Proceedings: Indoor Environmental Quality International Journal



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Investigating Student's Perception of Visual Comfort in Architecture Studios and Its Impact on Their Work Output

| Conference paper | First Online: 02 September 2023

| pp 119–144 | Cite this conference paper

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Tanishka Kharat & Namrata Dhamankar

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Abstract

Daylight plays a crucial role in the educational environment which enables better performance, learning rates and has a significant impact on the visual comfort of the students for which the classroom designs must be carefully considered. In addition to

Faculty: **Khandelwal Shruti, Dhamankar Namrata, Karve Sujata**
Title of the Paper: **Evaluating urban heat island due to built morphology in Pune city**
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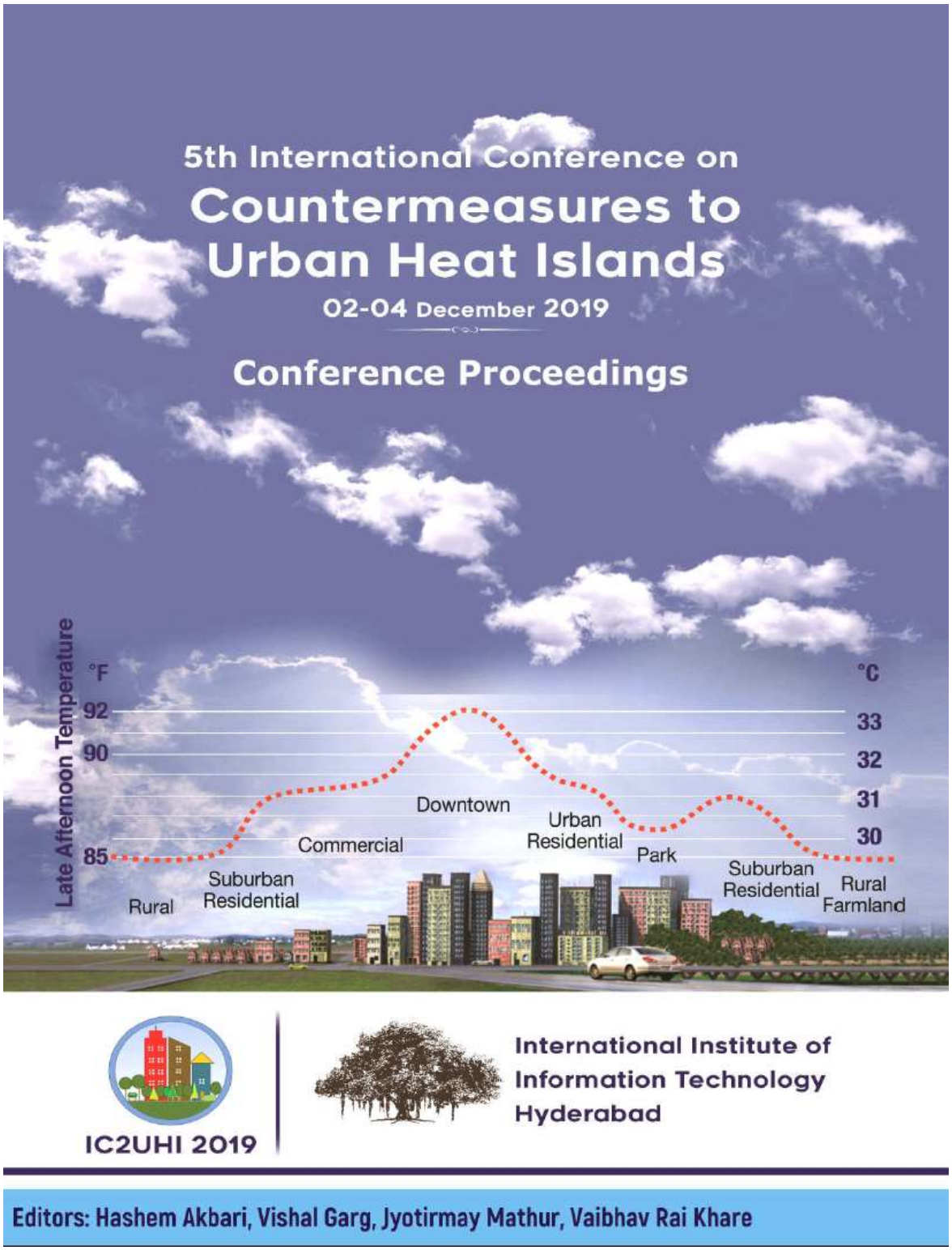

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List of Papers

EVALUATING URBAN HEAT ISLAND DUE TO BUILT MORPHOLOGY IN PUNE CITY

Shruti Khandelwal[1], *SavitriBai Phule Pune University (India)*
Namrata Dhamankar, SavitriBai Phule Pune University (India)
Sujata Karve, SavitriBai Phule Pune University (India)

ABSTRACT

Urban heat island describes built up areas that are hotter than nearby rural areas. The cities are becoming complex character consisting of different surface materials of low albedo and with lack of vegetative cover provides multiple surfaces for the reflection of solar radiation as well as absorption & storage of heat.

Urbanization is taking place at a faster rate in India. Population residing in urban areas in India, according to 1901 census, was 11.4%. This count increased to 30% according to 2011 census. According to a survey by UN State of the World Population report in 2007, by 2030, 40.76% of country's population is expected to reside in urban areas.

Pune is one of the fastest growing cities in India. It is the seventh largest metropolitan city of India and the second largest in Maharashtra. Urbanization has led the migration of people from rural to urban areas which increases the need of infrastructure. Between 1991 and 2001, the city grew by 40%, increasing from 1.6 million to 2.5 million and it's estimated that population will hit 5.6 million by 2031 if this trend continues. The Environment Status Report (ESR) for 2016 by the Pune Municipal Corporation (PMC) has categorically stated that "construction activities in the city and use of heat-absorbing construction materials has increased in the last few years, leading to UHI Effect. This effect has resulted in a difference of 4 to 5 degrees between the temperatures of the Pune city to that of surrounding rural areas". The report states that there is a direct impact of the Urban Heat Island Effect on human health issues such as heat stroke, headache, and tiredness.

This project aims to study and analyze the impact of urban morphology on the formation of UHI in Pune city and also focuses on investigating mitigation strategies.

Objectives are:

- Generate thermal maps for Pune.
- To identify Local climatic zone (LCZ)
- To identify construction materials.

The study shows how the urban factors such as the vegetation cover, shadings, orientation and aspect ratio of canyon are important elements that urban planners may take into account, especially for new urban developments in Pune.

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Faculty: **Aishwarya Mandavgane, Sujata Karve, Prajakta Kulkarni, Namrata Dhamankar**
Title of the Paper: **International Conference on Advances in Energy Research**
Name of the Journal/Proceedings: The Impact of Solar Photovoltaic (PV) Rooftop Panels on Temperature Profiles of Surroundings and Urban Thermal Environment
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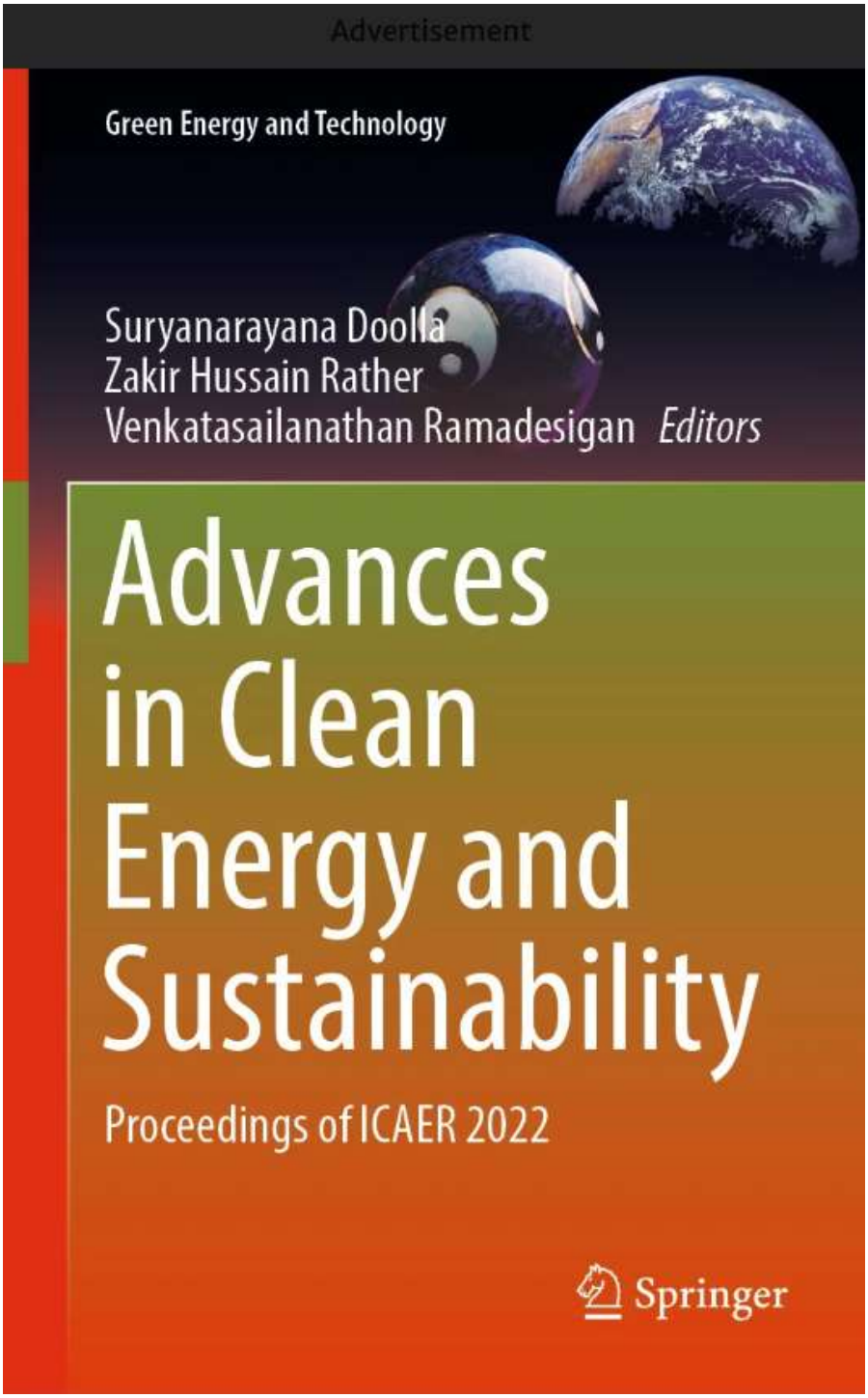

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The Impact of Solar Photovoltaic (PV) Rooftop Panels on Temperature Profiles of Surroundings and Urban Thermal Environment

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Aishwarya Mandavgane ✉, Sujata Karve, Prajakta Kulkarni & Namrata Dhamankar

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Included in the following conference series:
International Conference on Advances in Energy Research

Abstract

Solar photovoltaic rooftop installation is increasing rapidly in India with a solar target of 100 gigawatts by 2022. While photovoltaic (PV) renewable energy production has surged, this may have some effects on the Urban environment of that area. The aim of this paper

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(Principal | BNCA)

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